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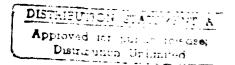
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INDUSTRIAL TECHNOLOGY MODERNIZATION PROGRAM



PHASE 3 PROPOSAL
CATEGORY 1 PROJECT
COUNTERMEASURES ASSEMBLY
IMPROVEMENTS



MAY 24, 1985



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Tracor Aerospace Aerospace Austin

PHASE III PROPOSAL CATEGORY 1 PROJECT COUNTERMEASURES ASSEMBLY IMPROVEMENTS

TRACOR PROPOSAL 905-0163

SUBMITTED TO:

General Dynamics Corporation Fort Worth Division P. O. Box 748 Fort Worth, Texas 76101

PREPARED BY:

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Tracor Aerospace Aerospace Austin

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Tracor Aerospace Aerospace Austin

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TECH MOD COUNTERMEASURES ASSEMBLY IMPROVEMENTS

1.0 INTRODUCTION

The objective of this project has been to design, develop, and implement a plan of improving all aspects of the Countermeasures Assembly procedure. This project included the stockroom, staging area, and the assembly area. The initial data and ideas were outlined about three years ago and have been further defined and developed in this project.

1.1 <u>Countermeasures Area Description</u>

The Countermeasures Assembly area produces four basic products with each basic product having variations. The four basic products are the Programmer Assembly, Dispenser Assembly, Electromagnetic Interference (EMI) Filter, and the Dispenser Control Panel Assembly (Cockpit Control).

Initial analysis of the assembly area and its related areas identified six areas of improvement. These areas of improvement include:

- 1) Stockroom location
- 2) Method of pulling kit parts in the stockroom
- 3) Staging room methods and location
- 4) Workstation concept and setup
- 5) Material handling equipment
- 6) On-line testing

Once the areas of improvement were identified, further investigation and development was pursued. The results of this investigation and development effort are presented in the following pages.

1.2 AS IS Assessment

Stockroom

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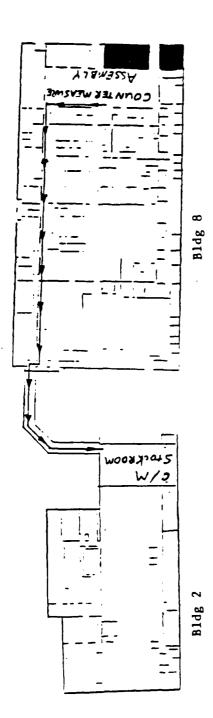
The Countermeasures stockroom is located in Building 2. A layout showing the stockroom in Building 2 and the assembly area in Building 8 is presented in Figure 1-1. All parts and materials from Receiving Inspection are identified and stored in the stockroom. The material is stored in bin-shelves by part number sequence.

Stockroom personnel use Quota Pull Requests (Figure 1-2) to kit all parts. A preprinted tag (Figure 1-3) is issued with the Quota Pull Request for each part listed. The stockroom person reads the Quota Pull Request and writes down the required parts on scrap paper. The person searches for the proper shelf(shelves), pulls as many part bins as can be carried, and returns to the desk. The person then performs the following operations:

- 1) Opens the parts package from the bin.
- 2) Counts the required number of parts.
- 3) Reseals the parts package from the bin.
- 4) Puts the required number of parts in a plastic bag.
- 5) Seals the plastic bag.
- 6) Puts a preprinted label on the plastic bag.
- 7) Sets the bag of parts in a box.
- 8) Marks the part off the Quota Pull Sheet.
- 9) Repeats steps 1-8 for each part pulled.

The stockroom person then returns the part bins to the shelves and repeats the process until the Quota Pull Request is completed. When the kit is completed, it is set in a storage

area to be picked up by a Production Coordinator. A Flow Process Chart is presented in Figure 1-4.



re 1-1. STOCKROOM/COUNTERMEASURES ASSEMBLY AREA LAYOUT

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Figure 1-2. QUOTA PULL REQUEST EXAMPLE

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PWO/NO JA1271 P/N 24750-C473 OTY 310.0 MRTO/NO H16140 ASY 004/141587-0005 FRACE DOC	PWO/NO JA1271 P/N 24750-U470 SEQ 101 QTY 50.0 MPTO/NO H16140 ASY UD4/141587-QUG5 1RACE DOC	PWO/NO JA1271 P/N 24750-0335 SEO 72 QTY 150.0 HPTO/NO H16140 ASY QQ4/141587-0005 TRACE DOC
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FRACE UPC	TRACE UOC	TRACE DOC
PWO/NO JA1271	FWO/NU JA1271	PUU/NO JA1271
P/N 24/50-U222 SEU 94	P/N 24753-0183	P/N 24750-0152 SEO 64
UTY STU-O MPTO/NO H16139	QTY 150.U MRTO/NO H16139	OTY 3/00.0 HR10/NO H16139
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Figure 1-3. PREPRINTED TAG LIST

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FLOW PROCESS CHART DUESTION EACH DETAIL PAGE _L OF 4 SUMMARY PRESENT PROPOSED DIFFERENCE Kitting Parts in Stockroom (6 parts) NO THAT NO TIME NO TIME OPERATIONS 69 MAN OR MATERIAL JOHN CONSON TRANSPORTATIONS 32 CHART BEGINS _ INSPECTIONS CHART ENDS_ DELAYS CHARTED BY GD DATE 2/8/85 STORAGES DISTANCE TRAVELED DETAILS OF (PRISINT) METHOD MOTES Receive Quota Pull Sheet Write down parts on scrap paper 3 min divided by 20 steps = O≯□D▽ Walk to Shelf 0.15 min/step 6 part average Pull part bin O≯□D▽ Walk to shelf $\Diamond\Box$ D ∇ Pull part bin Stack part bin in hands O∌□D▽ Walk to shelf ∮⊅□D▽ Pull part bin $\Diamond\Box$ Stack part bins in hands O∌□D▽ Walk to shelf ⇒□D▽ Pull part bin Stack part bins in hands O∌⊒D▽ Walk to shelf ♥⊅□D▽ Pull part bin 16 Stack part bins in hands O∌□D▽ 17 Walk to shelf 18 Pull part bin Stack part bins in hands

Figure 1-4. KITTING PARTS IN STOCKROOM

1.8 min divided by

part

11 steps = 0.16 min/step

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Walk back to desk

Sit down at desk

Open package

Set bins down on desk in order

Pick up part out of 1st bin

FLOW	PROCESS CHART	POSSIBILITIES	PAGE 2 OF 4
DETAILS OF (PRESENT) METHOD			HOTES
Count required number of parts			
Reseal package in bin			
Put package back in bin		111111	
Put part in plastic bag			
Seal plastic bag with stapler		MIIII	
Mark paperwork			
Peel preprinted tag from sheet			
Put preprinted tag on plastic bag			
Put plastic bag into kit box		MIIII	
Pick up part out of 2nd bin		8	
Open package			•
Count required number of parts			
Reseal package			
Put package back in bin			
Put part in plastic bag			
Seal plastic bag with stapler		MIIII	
Mark paperwork			
Peel preprinted tag from sheet			
Put preprinted tag on plastic bag			
Put plastic bag into kit box		X	
Pick up part out of 3rd bin		8	
Open package	ODDO .		
Count required number of parts		1111111	
Reseal package			
Put package back in bin		TITITI	
Put part in plastic bag			
Seal plastic bag with stapler		MIIII	
Mark paperwork			
Peel preprinted tag from sheet			

FLOW	PROCESS CHART	POSSIBILITIES	PAGE 3 OF 4
DETAILS OF (PRESENT) METHOD			MOTES
Put preprinted tag on plastic bag			
Put plastic bag into kit box		MIIII	
Pick up part out of 4th bin		8	
Open package			
Count required number of parts			
Reseal package		111111	
Put package back in bin			
Put part in plastic bag			
Seal plastic bag with stapler		<u> </u>	
Mark paperwork		111111	
Peel preprinted tag from sheet			
Put preprinted tag on plastic bag		<u> </u>	
Put plastic bag into kit box		MIIII	
Pick up part out of 5th bin		8	
Open package			
Count required number of parts			
Reseal package		11111	
Put package back in bin			
Put part in plastic bag			
Seal plastic bag with stapler		XIIII	
Mark paperwork			
Peel preprinted tag from sheet			
Put preprinted tag on plastic bag			
Put plastic bag into kit box		MIIII	
Ack up part out of 6th bin		8	
Open package			
Count required number of parts			
Reseal package			
Put package back in bin			

FLOW	PROCESS CHAR	וכווווווווווווווווווווווווווווווווווווו	PAGE 4 OF 4
DETAILS OF (TRESENT) METHOD			NOTES
Put part in plastic bag		1	
Seal plastic bag with stapler		IIMIIII	
Mark paperwork			
Peel preprinted tag from sheet			
Put preprinted tag on plastic bag			
Put plastic bag into kit box		I M I I I I	
Stand up .			in divided by 16 - 0.12 min/step
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Walk to Shelf			
Put 1st bin on shelf			
Walk to bin			
Put 2nd bin on shelf			
Walk to shelf		T M III II	
Put 3rd bin on shelf			
Walk to shelf			
Put 4th bin on shelf			
Walk to Shelf			
Put 5th bin on shelf			
Walk to shelf		TTM IIII	
Put 6th bin on shelf			
Return to desk			
Sit down			
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Production Coordinator - Stockroom to Staging Area

The Production Coordinator makes four trips daily or as required to pick up kits in the Building 2 stockroom. The coordinator delivers the kits by portable cart to the kit staging room in Building 8 (see Figure 1-1). The round trip is approximately 1200 feet and averages 12 minutes per trip.

Staging Room Procedures

One of two clerks uses the Quota Pull Request to verify the accuracy of the kitted parts. All parts, except weighed hardware, are physically counted to insure accuracy. This requires the kit parts to be emptied from the box, verified, and repacked into the box. The parts are then stored on shelves and logged into a kit log. A Shortage Sheet is sent to the planners. The planners track the parts on the Shortage Sheet and have them delivered to the staging area where they are mated with the respective kit. A Flow Process Chart is presented in Figure 1-5.

Production Coordinator - Staging Room to Workstation

After the planners have reconciled shortages, a PWO is sent to the Production Coordinator. The coordinator, upon receipt of the PWO, logs the kit out of the staging room and delivers it to the assembly area. A Flow Process Chart is presented in Figure 1-6.

Assembly Area

The working supervisor uses the PWO Instruction Sheets to stage kitted parts, materials, and tools at the workstations. This requires sorting through the kitted parts,

emptying the parts into storage containers, and identifying which part belongs at each workstation. Each storage container must be properly identified with the item number and part number by use of a tag which is attached to the container. The workstation location varies depending upon production requirements. A Flow Process Chart is presented in Figure 1-7.

Assembly personnel use the Parts List attached to the PWO Instruction Sheets to verify the parts and quantities. The assembly operator proceeds with the assembly operations using the PWO Instruction Sheets as a guide.

Assembly work that must be inspected is recorded in an inspection log by a group leader. This log contains the date, PWO number, part number, quantity, operation number, and location, which are used by inspectors to locate the assemblies.

The group leader informs the Production Coordinator of assemblies that are ready for test or burn-in. The coordinator transports the assemblies on a portable cart and places them on incoming shelves located in test and burn-in. The coordinator also retrieves tested and burned-in assemblies from the shelves and transports them to the proper assembly workstation.

Rework from inspection, test, or burn-in is returned to the assembly area where it is repaired and reprocessed through inspection and test operations.

Completed subassemblies are taken by the Production Coordinator to the staging room where they are stored until kitted for final assembly.

Completed final assemblies (LRU's) are delivered by the Production Coordinator to a staging area to wait for Government Inspection (DCASMA) or Customer Inspection (CSI). After the inspection approval, the Production Coordinator delivers the LRU's to the Shipping Department.

Tools & Testing Equipment

The Countermeasure assemblies require typical electronic assembly equipment, tools, and methods. The PWO Instruction Sheets specify the assembly method, sequence of assembly, and tools required. The following are typical tools and equipment used during the process: soldering equipment; hot air blowers; screwdrivers; pliers; harness boards; arbor presses; allen, socket, and open-end wrenches; riveting tools; and continuity testers.

Manufacturing Test Procedures, Acceptance Test Procedures, and Burn-in Test Procedures are used by the Test and Burn-in Departments in the performance of their specific tasks. These procedures are used in conjunction with special test equipment, Thermotron units, and holding fixtures to perform the functions descibed in the procedures.

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1	Put shortage sheet in planner box			$\nabla\nabla$			مطا		\perp	Ц			_
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3	Log kit into staging area			DQ									
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Log out kit						ΦE	DD			\coprod				\perp	1				
Walk to shelf						﴾□	DDD	_	_	Ц				_	_	ļ			
Pull kit	-					\ \$□	DD		_	\coprod									
Carry kit to	worl	are	a .		10	≯ ⊏	DD	_							_ _				
Set kit in wo	rk a	rea				ΦE	DV		<u> </u>	\coprod			\bot						
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Figure 1-6. PRODUCTION COORDINATOR

FLOW PROCESS CHART

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Figure 1-7. SORTING PARTS FOR WORKSTATION

2.0 PROJECT DESCRIPTION

The basic improvement areas are listed below. A more detailed list describing the improvement procedures and the benefits of each change also follows this list of improvement areas.

- 1) Relocate the Countermeasures stockroom in Building 8 adjacent to the assembly area.
- 2) Eliminate extra steps in the stockroom by using modified preprinted labels and carts with storage containers.
- 3) Eliminate the audit count in the staging room and bring the staging room under the control of the Production Coordinator.
- 4) Eliminate labeling part containers by the working supervisor.
- 5) Reduce assembly time and rework time while increasing efficiency by using a Cablescan Continuity Monitor/Tester.

2.1 <u>Proposed Improvements</u>

Departmental Layout

A departmental layout analysis was made to determine the most efficient location for the departments concerned with production. The analysis was based on the four basic products and the flow through departments during assembly. Figure 2-8 shows the resulting Departmental Process Layout. A high correlation exists between assembly, quality control, stockroom, and test. The assembly and quality control areas are so interrelated, they are shown in one area intermixed. The stockroom and test areas are also required to be adjacent to the

assembly area due to the high correlation of material flow through the departments.

Assembly Layout

A layout of the assembly area was prepared. Figure 2-9 shows the basic layout. Note the designated cart storage areas located next to the aisles of the assembly area. These storage areas will leave the required aisle space required by safety.

Staging Room

The staging room will be located in Building 8 adjacent to the stockroom and the assembly area. The staging room will be used for storage of parts which have been pulled from stock but are waiting to go to the assembly area. The audit counting and logging procedure currently used will be eliminated. The staging room will be controlled by the Production Coordinator. A drawing of the basic layout is presented in Figure 2-10.

Stockroom Location

The stockroom will be located in Building 8 adjacent to the assembly area. This will reduce the time and distance used to transport kits from stock to the staging area. See Figure 2-11 for a layout of Building 8.

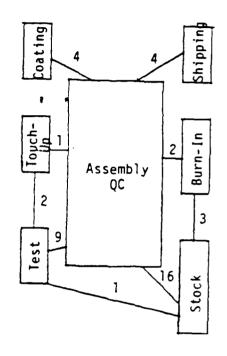
Stockroom Lavout

The stockroom will be located in Building 8 adjacent to the assembly area. All parts will be located in bins

				Fr	Om				
		Assembly	၁၀	Test	Touch-Up	Coating	Burn-In	Stock	Shipping
	Assembly		17	5		3	2	16	
	QC	41		3	4		1		
임	Test	4	7						
⊢	Touch-Up	1	1	2					
	Coating	1	2						
	Burn-in							3	
	Stock		18	1					
	Shipping		4						

IDEAL DEPARTMENTAL LAYOUT BASED ON MATERIAL FLOW THROUGH OPERATIONS

	<u>To</u>	From	<u>Total</u>
Assy	47	47	94
QC	49	49	98
Test	11	11	22
Touch-Up	4	4	8
Coating	3	3	6
Burn-In	3	3	6
Stock	19	19	38
Shipping	4	0	4
Total	140	136	276



To	FROM		То	From	
Assy QC	QC Assy	$\frac{17}{41} > 58$	Test Touch-Up	Touch-Up Test	$\frac{0}{2} > 2$
Assy Test	Test Assy	5 > 9	Test Stock	Stock Test	0 > 1
Assy Touch-Up	Touch-Up Assy	$_{1}^{0}>1$	Burn-In Stock	Stock Burn-In	$\frac{3}{0}$ 3
Assy Coating	Coating Assy	$\frac{3}{1}$ 4	Shipping	Assy	4 > 4
Assy Burn-In	Burn-in Assy	$\frac{2}{0}$ > 2	QC Stock	Stock QC	$_{18}^{0} > 18$
Assy Stock	Stock Assy	$\frac{16}{0} > 16$	QC Test	Test QC	$\frac{3}{7}$ 10

Figure 2-8. DEPARTMENTAL PROCESS LAYOUT

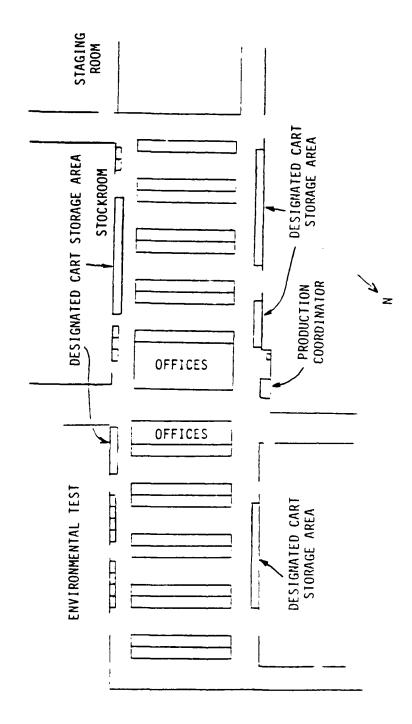


Figure 2-9. NEW ASSEMRLY LAYOUT

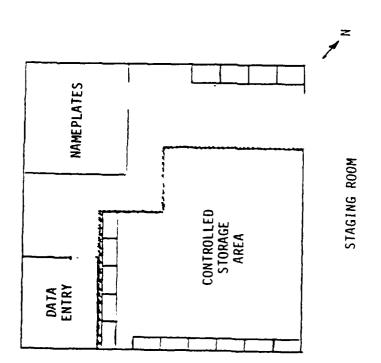
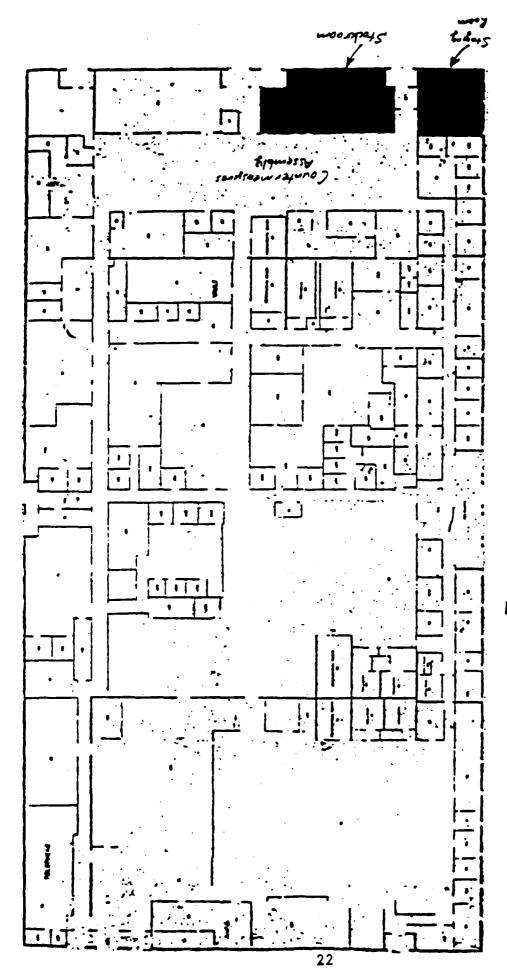


Figure 2-10. NEW STAGING ROOM LAYOUT



BUILDING B
LOCATION PLAN FOR PROJECT

DARK AREA INDICATES CONSTRUCTION PROJECT AREA

NEW STOCKROOM/STAGING LOCATION

Figure 2-11.

on the shelves in numerical sequence excluding bulk material. A layout is presented in Figure 2-12.

Preprinted Labels

Preprinted labels will be issued with the Quota Pull Request. The preprinted labels will be modified to include the workstation number and the location in which it should be set at the workstation. The modified labels will reduce the time used to set up a workstation. A modified preprinted label is presented in Figure 2-13.

Carts

Forty stockroom carts will be located in a designated cart storage area located next to the aisles of the assembly area. Each cart will have a place to hang storage containers and a work area in which to count parts. It will hold the Quota Pull Request and office equipment (pens, ruler, scissors, etc.). These carts will be pushed to the stockroom shelves, have the parts counted out on them, and then be pushed to the staging area. See Figure 2-14 for a picture of cart.

Fifteen additional carts will be used for large stock items which will not fit into the storage containers. These carts will be used to move material from stock to staging to assembly. See Figure 2-15 for cart description.

Ten carts for in process storage and moving parts to and from special areas (test, burn-in) will be provided in the assembly area. The carts will be located near each workstation. These carts will reduce time spent loading and unloading subasemblies by the Production Coordinator. See Figure 2-14 for a picture of cart.

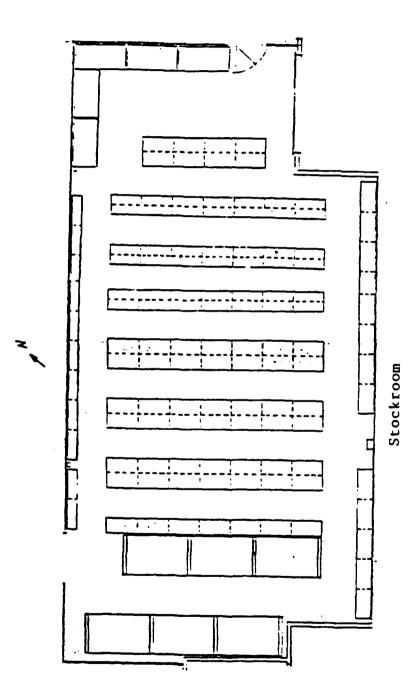


Figure 2-12. NEW STOCKROOM LAYOUT

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#10/10 J41271 WS 1-2 #7.1 2#1381-0.534 SEO 65 917 #50.40 H410/10 H16140 \$2 KSY UP4/141587-0005 FRACE UPC	PVO/NO JA1271 WS 2-3 F/N 24750-0333 SEO 73 QTY 450.0 PRTO/NO H16140 ASY 904/141587-0005 TRACE DCC	PUO/NO JA1271 WS 3-3 P/N 24750-0332 SED 75 OTY 900.0 MRTC/NO H16139 ASY 004/141587-0005 TRACE DOC
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FYC/10 JA1271 WS 1-4 P/L 24/5E-U222 SEU 94 UT 3FU.9 MP 10/NO H16130 ASY UC4/141537-FUUS	FWO/NU JA1271 WS 2-5 P/N 24753-0187 SEQ 62 QTY 15U.U MRTO/NO H16139. ASY OD4/141587-0005 TRACE DOC	PWO/NO JA1271 WS 3-5 P/1 24750-0152 SEO 64 017 306.0 HRTO/NO H16139 ASY ON4/141587-POC5 TRACE DOC

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Figure 2-13. MODIFIED PREPRINTED LABEL



STOCKROOM CART

IN-PROCESS CART

Figure 2-14. EXAMPLE - STOCKROOM CARTS

HODGE TRUCKS

All Welded Shipped Completely Assembled Ready to Use

Low Deck Shop 800 lb. Capacity

- Shelves made of #13 gauge steel with lips down
- Handle offset on LD Series to allow room for fingers when loaded with packages
- Supplied with 5" rubber tired casters 2 rigid and 2 swivel
- Finished in gray

For welded casters, add autitx -W Example: LD-836-W For shelves with lips up, add autitx -L Example SH-830-L



Courts	Tida	Witzel Number Type	Straight Handle Type	Ship. Wil.
_18"	30"	LD-830	8H-830	90
18"	33"	LD-433	BH-633	92
18"	36"	LD-831	8H-831	94
18"	45	LD-633	SH-832	100
22*	36"	LD-834	8H-636	97
24"	30	LD-834	8H-834	9.8
24"	36"	LD-835	8H-835	100
24-	42'	LD-837	8H-837	102
24"	45	LD-838	8H-838	109
<u></u>	64"	LD-839	6 H-839	113
24"	60.	LD-840	BH-840	120
30"	42"	LD-841	8H-841	120
30	48"	FD-843	8H-842	126
30"	60*	LD-443	8H-843	140
30"	72	LD-844	8H-844	158
36"	60"	LD-845	BH-845	158
36"	72"	LD-846	SH-846	170



Portable Tables

Figure 2-15. CART DESCRIPTION

Stockroom Procedure

Upon receipt of a Quota Pull Request and the preprinted labels, the stockroom personnel will get a cart and enough storage bins to fill the order. The person will proceed to the first part number and location listed on the Quota Pull Upon reaching the location, the person pulls the part bin from the shelf and counts out the proper number of parts on the cart. The person puts the part bin back onto the shelf. person then gets a storage container from the cart, puts the counted parts into the storage container, and finds a preprinted label which corresponds to the part and puts it onto the storage container. The storage container with parts is put onto the cart. The person marks off the part on the Quota Pull Request and moves to the next part and location. When the person finishes all of the parts on the Quota Pull Request, the person pushes the cart with parts to the staging area and notifies the Production Coordinator. The person sends the Shortage Sheet to the planners and returns to the stockroom. This procedure eliminates writing the parts down, trips to the shelves and back to the desk to get parts, sealing the parts in a plastic bag, and trips to shelves to return the part bins. A Flow Process Chart is presented in Figure 2-16.

Setup Sheets

Setup Sheets will be prepared by the Manufacturing Engineers based on the Manufacturing Packages for each assembly. The Setup Sheets will standardize the workstations with operations, parts, and tools. Copies of all Setup Sheets will be included with the Instruction Sheets. The Setup Sheets will reduce time setting up the assembly workstation by providing part locations and a list of required tools.

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Put required	numbe	roft	ins	on car	rt	₽Ç	Ò	$D\nabla$							\perp	L			
Walk to shelf	push	ing ca	rtw	/bins)		DV	<u> </u>	_				1	\perp				· .
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Set bin on c	art		_		_ (ΟÌ		$D \nabla$		_				1	\perp				
Pick up part	pack	age)		$D\nabla$		_		Ц		1	\downarrow				
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Put package b	ack 1	n bin	from	shel)		$D\nabla$				Ц							
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FLOW PROCESS CHART OF_4 PAGE POSSIBILITIES DETAILS OF (PROPOSED) METHOD NOTES Put counted parts in bin from cart Mark paperwork $\Diamond\Box$ \Box \Box Peel preprinted tag from sheet Put preprinted tag on bin from cart Return shelf bin back to shelf Walk to shelf pushing cart Pull 3rd part from shelf Set bin on cart Pickup part package $\Diamond\Box$ $D\nabla$ Open package Count required number of parts Reseal package Put package back in bin from shelf Put counted parts in bin from cart Mark paperwork Peel preprinted tag from sheet Put preprinted tag on cart bin Return shelf bin to shelf Walk to shelf pushing cart Pull 4th part from shelf Set bin on cart Pickup part package Open package Count required number of parts Reseal package Put package back in bin from shelf Put counted parts in bin from cart Mark paperwork Peel preprinted tag from sheet

KITTING PARTS IN STOCKROOM

- Figure 2-16.

FLOW	PROCESS CHART	POSSIBILITIES	PAGEOF4
DETAILS OF (PRESENT) METHOD			MOTES
Put preprinted tag on cart bin			
Return shelf bin to shelf			
Walk to shelf pusing cart			
Pull 5th part from shelf			
Set bin on cart			
Pickup part package			
Open package		111111	
Count required number of parts			
Reseal package			
Put package back in bin from shelf			
Put counted parts in bin from cart			
Mark paperwork			
Peel preprinted tag from sheet			
Put preprinted tag on cart bin			
Return shelf bin to shelf			
Walk to shelf pushing cart			
Pull 6th part from shelf			
Set bin on cart			
Pickup part package			
Open package			
Count required number of parts			
Reseal package			
Put package back in bin from shelf		 	
Put counted parts in bin from cart			
Mark paperwork		111111	
Peel preprinted tag from sheet			
Put preprinted tag on cart bin		 	
Return shelf bin to shelf		 	
Walk to planner desk pushing cart			
Figure 2-16.	KITTING PARTS IN STOC	KKUUM	

FLOW	PROCESS CHART	POSSIBILITIES	PAGE 4 OF 4
DETAILS OF (PRESENT) METHOD			HOTES
ave cart with planner aide			
t shortage sheet in planner's box		111111	·
turn to stockroom		111111	
·			
	00000		
		 	
•		111111	
		11111	
	00000	 	
	00000	 	
		 	
		 	

Tracer Aerespace

Workstation Description

A workstation will not be a permanent location but will be a standardization of the operations, required parts, and tools required in an area. The workstation location for an assembly will be designated by the assembly supervisor based on production requirements at the time of assembly. The work tables used for workstations will have racks permanently mounted to hang the part bins. Storage carts for finished assemblies will also be located next to a workstation. A standardized workstation will reduce setup time and reduce assembly time because the assembly operator will know the location of each part.

Production Coordinator

Upon receipt of a Production Work Order the Production Coordinator will retrieve the cart(s) with the kit and take the kit to the assembly area. After the working supervisor has audited the kit and placed the parts at the proper workstation, the Production Coordinator will return the cart to stock. A Flow Process Chart is presented in Figure 2-17.

The Production Coordinator will also move inprocess subassemblies to the staging room or to a special area as required using the storage carts.

Working Supervisor

The Working Supervisor will get a Setup Sheet and the Quota Pull Request. The supervisor will verify the parts and quantities and set the parts at the proper workstation per the Setup Sheet and the preprinted label. The supervisor will also

set the required tools at the workstation. A Flow Process Chart is presented in Figure 2-18.

Testing Equipment

Cablescan Continuity Monitor/Tester units will be installed in the assembly areas. These units will reduce assembly and rework time while increasing assembly efficiency. A description of the Continuity Monitor/Tester is presented in Figure 2-19.

2.2 Project Management Plan

The Project Investigator for this project is George Dickinson, Industrial Engineer. The Project Investigator reports directly to the Industrial Tech Mod Program Manager, who is Russ Petrie. Responsibilities of the Project Investigator include project management, cost, schedule, and technical conformance.

The departments contributing direct support to the project include Manufacturing, Engineering, Material Control, and Quality Engineering. Considerable overhead support was contributed by Facilities Engineering. The organization for this project is depicted in Figure 2-20. The required job type and man-hours for this project appear in Chapter 3. The Project Master Schedule for this project is shown in Figure 2-21.

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FLOW PROCESS CHART DUESTION LACH DETAIL NO PAGE _ 1 OF_ SUMMARY PRESENT PROPOSED DIFFERENCE NO TIME TIME JOB Working Supervisor **OPERATIONS** TRANSPORTATIONS MAN OR MATERIAL INSPECTIONS CHART BEGINS_ DELAYS CHART ENDS. CHARTED BY GD DATE 2/8/85 STORAGES DISTANCE TRAVELED INSPECTION DELAY DETAILS OF (PRESENT METHOD NOTES O♥□D▽ Get Setup Sheet & Quota Pull Verify parts and quantities Set parts at proper workstation Set required tools at workstation Notify Production Coordinator that cart is ready to go to $\bigcirc \bigcirc \Box \bigcirc \bigcirc$ storage $\bigcirc \bigcirc \square \square \square \nabla$ $O \Rightarrow \Box D \nabla$ $\bigcirc \Diamond \Box D \nabla$ $\bigcirc \Diamond \Box \Box \Box \nabla$ 10 $\bigcirc \bigcirc \square \square \square \nabla$ O12 $\bigcirc \Diamond \Box \Box \Box \nabla$ 13 $O \Leftrightarrow \Box D \nabla$ 14 O15 $\bigcirc \Diamond \Box D \nabla$ 17 $\bigcirc \bigcirc \Box \bigcirc \nabla$ 18 $O \Leftrightarrow \Box D \nabla$ 19 $\bigcirc \Diamond \Box D \nabla$ 20 21

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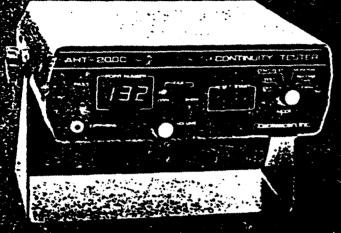
AHT-200C AHT-200CP Self-Programming Continuity Monitor/Tester

The AHT Continuity Monitor/Tester, incorporating space-age microprocessor technology, represents a new era in cable and harness assembly efficiency new era in capie and namess assembly embency.

Dramatic savings in assembly and testing costs are provided by eliminating the need for preprogramming the need for preprogramming.

or winning the need for preprogramming of winning of programmed interfaces.

With the AHT you can monitor and test assemblies within minutes after you fabricate a correct cable or even a simulation, plus changeover from one cable program to another is equally fast!



AHT-200C

The AHT incorporates sophisticated circuitry enabling it to "memorize" point-to-point and multiple circuit connections of an existing cable or harness in seconds. This memory is then retained in the unit as you months and test any number of additional

The AHT-200CP has the same features except the Assembly mode replaces the Monitor mode. In this mode a probeylocated on the front paner is used to locate wires; and provide "From" -"To" point data.



Special Features

Key. Switch prevents accidental atteration of AHT's memory by unauthorized personnel.

Setter est capability verifies the proper pperation of the AHT before use, tests Thore than 90% of the unit; electronic. withing flip of the mode switch

Mornory Error is indicated if the data input from a tape is unreadable

callows use of the earphone instead of the built-in spriaker for assembly manitaring; valume control adjusts sound level for both

Battery Pack incorporated internally wittrjautomaticreharger to maintain คก. pusting memory, up to 30 days without to external power in case of accidentals

Stored Memory - Cablescan AHT models have the unique built-in capability to feed their memories to the causettes of ordinary tape recorders The programs can then be stored while the AHI is used to monitor or test differently wired harnesses. Later, the AHT can relearn from a stored memory by playing the tape back into it. This changeover from monitoring or tresting one assembly to another can be accomplished in minutes. A single AHT can perform a multitude of functions on , different harnesses within a single workday.....all performed by less costly non-technical personnel These same features allow quick and economical engineering changes



Cassette 7 ap

Figure 2-19: CABLESCAN CONTINUITY MONITOR/TESTER

OC AHT-200CP

Tylnputymemory, connect a properly wired assembly or simulation to the unit; set the mode switch to Learn and press the start button in less than a rsecond, the pass light will come on, indicating that the AHT is programmed and ready to monitor or test.

Test' Interconnect a completed harness to the AET and set the mode switch to test. The unit immediately checks pointby-point and multiple connections against its memory and signals with the Pass light if the wiring is correct. A missing or poorly connected wire will be indicated by the Open light and the Affashing of two point numbers. An incorrect connection is indicated by the Short light and display of the two point numbers which are connected.
Additional errors will be detected by pressing Start or correcting an open condition

Continuous Test • Intermittent shorts or .ppen_connections.due.to vibration, temperature extremes, etc., are readily detected by selecting the Continuous Test mode while subjecting the assembly to the suspected condition. The AHT will repeatedly test all connections until an errorgs detected, then it will display the Type of problem and the point numbers

Monitor The AHT-200C will assist in wining of assemblies by using the Monitor mode. Any attempt to miswird white assembling the harness is imaginalled by both an audio and visual display indicating a short. The two point numbers of the miswire will be displayed.

Assembly • The Assembly mode of the UA-TC-200CP has replaced the Monitor mode of the AHT-200C. A probe, located on the front panel, is used to locate wires and provide "From" - "To" point data; When atwire end is probed the display will indicate the point number along with the termination point number. An acidio tone will sound when the wire ris terminated properly and the displaywill be cleared. If the displayed wire is not to be terminated the wire may be carrogled by either depressing the Start switcher by probing the termination points if the probed point has already been terminated the tone will sound t verify termination. After the assembly been completed the Test mode is tto verify that all terminations have completed and that no shorts have created si



Back of unit

Capacity	AHT-200 - 20	n Points
Operating Speed	Test, Self Tes	st. Monitor, Learn (from known good) less and Tape, Learn (from tape) less than 40s.
Sensitivity,	Open circuit: Test Voltage:	Less than 1K indicates short. More than 10K indicates open in the short less than 5VDC. Less than 2mA
Interwire Capacitance	1000 pF max	mum
Display		nm) LED numeric display. LED indicators en. Short.
Audio		when a short is created while in Monitor valid continuity in Assembly mode.
Program Memory		mal battery pack and automatic charger to ram memory up to 30 days without er
Tape to	Impedance Level	5KΩ Nominal 2V P—P minimum
Tape Out	Impedance: Level.	
Recorder Speed	Variation up acceptable.	to 15% from record to playback is
Power	104-126 VRM 50-60 Hz	IS or 208-252 VRMS internally selectable,
Operating (emperators	32°F to 105°	F (0°C to 40°C)
Ctorane Temperature	-40°F to 16	5°F (40°C to 74°C)
Maximum, Dimensions		3.3 inches (27.18 x 21.08 x 9.14 cm) 1

Ordering Information

Model Number	Description: 2 .	Part Number
AH:1 700CL [.200 Point Self-Programming Continuity	5210695-01
	Monitor/Tester	
AFF 200CP,	200 Per 3: Self-Programming Continuity	. 1.5210816-01
	Ferter Assembly Aid	17 200
Accessories		
Carsette Tape Recorder		. 5210660 👍
Presture		5210465

200 points

tiO II Operating characteristics are designed to be compatible with any good quality consumer tape recorder. Specification change privileges reserved.



The Mello Company, Inc. P.O. BOX 29301 • Dallas, Texas 75229 · 214/241-9196

6.39 lbs (2.90 kg)

145 E. Emerson Avenue, Orange, California 92665 7144, 998-1961: Telex:692345

d Printed in U.S.A. 12/52 Made in U.S.A. 5000[5][R] TOM Cab

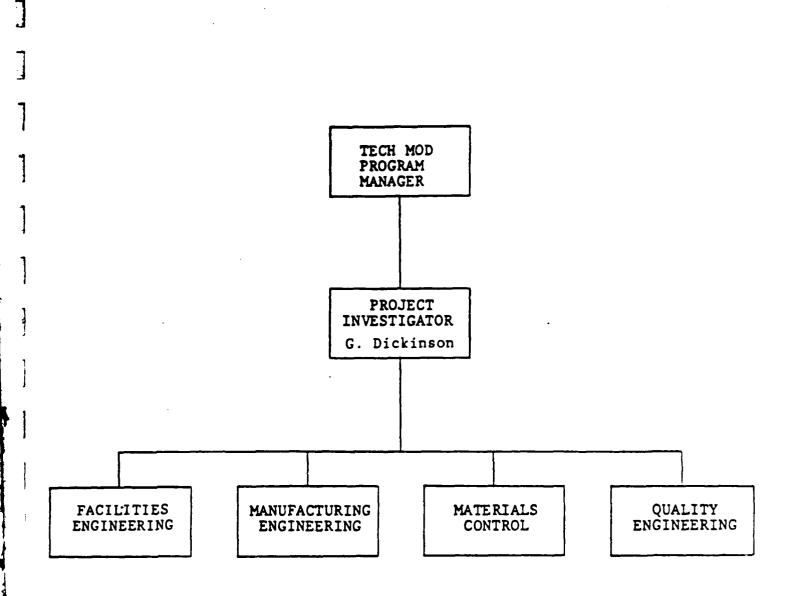


Figure 2-20.

PROJECT ORGANIZATION STRUCTURE COUNTERMEASURES ASSEMBLY

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Figure 2-21. PROJECT MASTER SCHEDULE

3.0 IMPACT OF PROJECT SAVINGS ON FUTURE PROPOSALS

Beginning 1 June 85 all proposals leaving Tracor will have to include a slight price reduction as a result of the Tech Mod project for the Countermeasures Assembly Improvements. These improvements will be put in place during the summer, and the shop will start using the Cablescan Continuity Monitor/Tester (CCM/T) on 1 Sep 85. However, the parts coming through the improved shop will not show up in LRU's to be shipped until Feb 1986. This is due to the normal scheduling of parts through the sequence of Fab-Finish-PCB-Assembly-Test-Ship.

For the purpose of proposals, Tracor intends to eliminate any possibility of submitting old labor estimates on parts to be produced using the CCM/T. This section explains the procedures to be used in properly pricing proposals that contain Countermeasures Shop parts.

During the first 5 months of operation, using the CCM/T, the 13 part numbers that currently go through the Countermeasures Assembly will be processed through the shop once. This is based on the average length of time between PWO runs on a variety of part numbers from past records. It will take a second 5-month period (Feb - Jun 86) for 2 lots of all part numbers to get through the shop, another 5 months for 3 lots, etc. It is assumed that it will take five 5-month periods, or 25 months (1 Sep 85 - 30 Sep 87), before the 13 part numbers will have been through the Cuontermeasures Assembly 5 times, for 5 "new" actuals.

Normally, Tracor bases its proposals on the average labor and materials cost on the last 5 runs of each part number that goes into an LRU. Tracor will continue to roll-up manufacturing bids based on the last 5 actuals, but will make an

adjustment at the LRU level to take into account the savings being realized for Countermeasures LRU's. The adjustment will depend upon when the data on the last 5 runs is gathered.

The following explains how the adjustment will be made during the September 1985 - September 1987 time frame:

1 June 85 - 31 Aug 85

During this period all 5 manufacturing lots are "old" touch labor actuals, recorded in the "unimproved" Countermeasures LRU's. For a proposal being prepared during this period with contractual delivery in February 1986 or later, each LRU will have to be adjusted downward by an amount equal to the proposed Countermeasures Shop savings. The savings have been identified by LRU and are being provided to our Proposals people concurrently with the submittal of this proposal.

1 Sep 85 - 31 Jan 86

The proposals prepared during this period will be based on 4 "old" lots and 1 "new" lot. We cannot deduct the full savings from manufacturing estimates on each LRU because the figures already reflect some improvement based on the 1 new lot. Therefore, 80% of the full LRU savings will be deducted from the manufacturing estimates during this time period.

1 Feb 86 - 30 Jun 86

Since the manufacturing actuals will now show 3 "old" lots and 2 "new" lots, 60% of the LRU savings will be deducted from manufacturing estimates for each LRU during this period.

- 1 Jul 86 30 Nov 87
 - The manufacturing actuals during this period will now contain 2 "old" lots and 3 "new" lots. Forty percent of the LRU savings will be deducted from each LRU during this period.
- 1 Dec 87 30 Apr 87
 Actuals now contain just 1 "old" lot and 4 "new" lots.
 Deduct 20% of full LRU savings during this period.
- 1 May 87 and after

After 1 May 1987 all 5 manufacturing lots are assumed to be "new" actuals, recorded in the "improved" Countermeasures Assembly LRU's. Since the data fully reflects the full savings, there is no longer any adjustment required at the LRU level.

As accounting date is generated on actual hours per part following implementation of the improvements, savings data will be compared to expectations. Depending on whether savings are higher or lower than expected, there may have to be some revisions made to the systematic procedures and percentage adjustments outlined above.

VOLUME I

ATTACHMENTS

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT Phase III Proposal Attachment A - Project Economic Summary

Implementation Date:		1 Sept 1985
Man-Hour Savings	Instant F16	253.8
	Future F16	1607.9
	Instant Other DoD	598.8
	Future Other DoD	3303.9
	TOTAL	5764.4
Labor and Material	Instant F16	\$ _7,585 _
Savings (Loaded \$'s thru fees)	Future F16	\$ 51,414
thru rees)	Instant Other DoD	\$ 17,595
	Future Other DoD	\$ 107,821
	TOTAL	\$184,415
Internal Rate of Retu	rn:	21.7%
Payback in Years:		2.5
Subcontractors Capita	l Funds:	\$38,220
Subcontractors Relate	ed Funds:	\$ 15,830
DoD Funds:		\$

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

Phase III Proposal

Attachment B - Project Cash Flow Summary

See IRR model results in Volume II 2.0

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COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

Phase III Proposal

Attachment C - Expenditure Summary

Capital Labor	1985
Install Stockroom	
Contract Labor (Exp. Code 25)	
300 hours x \$10 per hour (est.)	\$ 3,000
Prepare Setup Sheets (PWO's)	
Manufacturing Engineer, Bid Code M2, Exp. Code 05	
250 hours x \$14.90 ① x 2.60 ②	9,685
Modify Computer Printouts	
Operation Services (Exp. Code 01)	
300 hours x \$10 pfr hour (est.)	3,000
Train Personnel	
Manufacturing Engineer, M2, 05.	
250 hours x \$14.90 x 2.60	9,685
	<u>\$25,370</u>

- ① Hourly bid rate per latest revised bid package (thru 4-5-85)
- 2 1 + overhead rate from latest revised bid package (thru 4-5-85)

COUNTERMEASURES ASSESMBLY IMPROVEMENTS PROJECT

Phase III Proposal

Attachment C - Expenditure Summary (cont.)

Capi	tal Equipment			1985
2	Cablescan Monitor Testers	\$1895.00	ea.	\$ 3,790
8	Mating Connectors	30.00	ea.	240
1	Tape Recorder for programming Continuity Monitor Testers	161.00	ea.	161
40	Portable Stockroom Carts	125.00	ea.	5,000
10	Portable In-Process Carts	229.00	ea.	2,290
15	Low Deck Carts w/o Racks	110.00	ea.	1,650
1000	Storage Containers (small)	.65	eа.	650
200	Storage Containers (large)	1.43	ea.	286
80	3-Tier Table Storage Racks	16.00	еa.	1,280
	Staging Room Caging			894
				\$16,241
	Tax 5 1/8%			832
				\$17,073
	Material Handling 12%			2,049
-	Total			<u>\$19,122</u>
Capi	tal Other			
	Construct Stockroom & Staging Area	3		
	FIR 85-003			\$ 3,283
TOTA	L CAPITAL (Recovered)			<u>847,775</u>

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

Phase III Proposal

ATTACHMENT C - Expenditure Summary (cont.)

Non-Recovered Expensed Costs	1985
Project Investigator	
Mfg. Engineer, M2, 05	
300 hours x \$14.90 x 1.32	\$ 5,900
Move stock, label shelves, enter locations	
Stockroom Personnel, M7, 05	
500 hours x \$5.87 x 1.32	3,874
Removal & rework of old structures in new Stockroom area	
FIR 85-003	8,033
Total Non-Recovered Expensed Costs	<u>\$17,807</u>
Recovered Expensed Costs (Budgeted)	
Design & Layout of Stockroom & Staging Room	
Facility Engineer, Ol	
150 hours x \$10.00 (est.) x 1.32	<u>\$ 1,980</u>
Total Recovered Expense Costs	<u>\$ 1,980</u>

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT Phase III Proposal Attachment D - Project Assumptions

No specific assumptions were made during the course of this project investigation.

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

Phase III Proposal

Attachment E - Visual Summary of Current

and Proposed Processes

See Sections 1 and 2, Volume I.

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT Phase III Proposal Attachment F - IRR Computations

See IRR Model, Volume II, page 3.

COUNTERMEASURES ASSEMBLY INPROVEMENTS PROJECT

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ATTACIPIENT G - MANUFACTURING SCHEDULES

		INSTANT				FOL	FOLLOW-ON		
	F16	USAF	COMM'L	ii.	F16	2	USAF	00	7,6600
	1985 1986	1985 1986	1985 1986	1986	1986 1987-91	1986	1986 1987-91	1986	1986 1987-91
130386-0001	12	72	12					170	114
*133490-0001		43							•
*133490-0002		136							44
133686-0001		245		96	213				. 77
133800-0001		117	9	96	213	35	76	7	
133882-0001		36							3 2
133882-0002		36							3 2
133896-0001	72	133	æ						44
*134001-0001	711	179							. 44
134016-0001		43				56	77		;
134025-0001						1			8
*134025-0002	72	7.8							;
*134036-0001		72							99
*135820-0003			2					19	: £
*135820-0004			2					;	3
135850-0110								170	20
135878-0001	82	327		96	213	45	45		:
*135890-0002	107	409		192	426				
*135890-0003		23				06	06		
135912-0001	534	49		96	213	90	06		

Cablescan savings related part number

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

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ATTACIPIENT 6 - MANUFACTURING SCHEDULES

1985						
1985	F16	USAF	COMM'L	F16	USAF	COMM
	1985 1986	1985 1986	1985 1986	1986 1987-91	1986 1987-91	1986 1987-91
136550-0001		E				
136570-0001		-			75	
*136580-0001		-				
139651-0002		131			/0 07	
140487-0001 176		300		86 213	45	
141020-0001		144				
141030-0001		36			•	
142927-0001			vo		09 711	
142942-0001			24			
142949-0001			9			
142952-0001			9			
143119-0001			404			4
143120-0001			262			<u>C</u> 4
143121-0001			215			Ç.
148250-0001			55			,
155200-0001			4			
157600-0001						34 11
143112-0001			24			
143115-0001			12			
135602-0004		-				

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

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ATTACHPENT G - MANUFACTURING SCHEDULES

		INSTANT			FOLLOW-ON		
	F16	USAF	COMM'L	F16	USAF	100	COHM'L
	1985 1986	1985 1986	1985 1986	1986 1987-91	1986 1987-91	1986	1986 1987-91
135602-0400		ю					
135603-0300		₹					
135604-0500		es					
135947-0001				96 213	45 45	45	
136530-0001					26 67	15	24
*136540-0001					26 67		
136560-0001					26 67		
145303-0001						24	
145304-0001						24	
145550-0001						7	
145560-0001						7	
145570-0001						7	
148075-0001						45	
148125-0001						45	
148331-0001						06	
148451-0001						45	
154097-0001						1	
145180-0002						48	
145576-0001						7	

TECH MOD COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

ATTACHMENT H - SAVINGS CALCULATIONS

```
RELOCATE STOCKROOM
   (eliminate costs - observation by IE to assess savings)
4 trips/day x 12 min/trip x 246 days/yr x hr/60 min =
     196.8 hr/yr
8 trips from test/day x 12 min/trip x 246 day/yr x hr/60 min =
     393.6 hr/yr
TOTAL = 196.8 + 393.6 = 590.4 \text{ hrs/yr}
MODIFY STOCKROOM PROCEDURES
                            (reduce costs)
Data from timing of 6 parts pulled 2/8/85
5000 parts/month pulled
5000 parts/month x 30% (# of parts pulled using cart) =
     1500 parts/month
PULLING PARTS (See Kitting Parts in Stockroom - Figure 1-4)
0.15 min/step-6 parts x 7 steps x 1500 parts/month x hr/60 min
     x 12 month/yr = 52.5 hr/yr
PACKAGING PARTS (see Fig. 1-4)
0.16 min/step-part x 2 steps x 1500 parts/month x hr/60 min
     x 12 month/yr = 96 hrs/yr
RETURNING PARTS TO SHELF (see Fig. 1-4)
0.12 min/step-6 parts x 9 steps x 1500 parts/yr x 12 months/yr
     x hr/60 min = 54 hrs/yr
TOTAL = 52.5 + 96 + 54 = 202.5 \text{ hrs/yr} (overhead function)
ELIMINATE STAGING AREA (see Staging Parts/Verifying
     Quantities - Figure 1-5)
0.12 + .16 + .42 + .5 + .16 + .12 = 1.48 \min/kit
0.4 + .4 + .4 + .16 + .16 = 1.52 \min/part
1.48 min/kit x 5 kit/day x 246 day/hr x hr/60 min = 30 hrs/yr
1.52 min/part x 5000 part/month x 12 month/yr x hr/60 min =
     1520 hr/yr
TOTAL
      =
           30 hr/yr + 1520 hr/yr = 1550 hrs/yr (overhead
function)
PRODUCTION COORDINATOR-STAGING TO ASSEMBLY
   (eliminate costs - Fig. 1-6)
1 min/kit x 5 kit/day x 246 day/yr x hr/60 min = 20.5 hr/yr
(S7)
```

TECH MOD COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHMENT H - SAVINGS CALCULATIONS

SORTING PARTS AT WORKSTATION (reduce costs - see Fig. 1-7)
5 kit/day average taken from staging room logout sheet over
6-month period. Timed the sorting operation to get times.
0.42 min/kit x 5 kit/day x 246 day/yr = 8.6 hrs/yr
1.38 min/part x 1500 parts/month x 12 month/yr x hr/60 min =
414 hrs/yr
TOTAL = 8.6 hrs/yr + 414 hrs/yr = 422.6 hrs/hr (M7)

CONTINUITY MONITOR/TESTER

Savings based on standard times formula for manually sorting wires in a bundle (W x W x .005 = times in minutes) and the time required to label each wire (0.153 min/wire). The time to sort and install the wires to the proper connector location using the Continuity Monitor/Tester (0.2 min/wire) was subtracted from the manual time to compute the total savings. (See below.)

Example: 33 wires
33 x 33 x 0.005 = 5.445 min/assy
33 x 0.153 = 5.049 min/assy
5.445 + 5.049 = 10.494 min/assy (manually)
33 x 0.2 = 6.6 min/assy (Continuity Tester)
SAVINGS = 10.494 - 6.6 = 3.894 min/assy

LRU'S	SUBASSY'S	# OF	WIRES	Si	AVINGS	BID	CODE
135890-0002			, 23		min/assy	•	47)
135890-0003			33		min/assy	(1	47)
134001-0001		34	, 15	4.60	min/assy	()	47)
134025-000X	(134030-1)	16	, 32	5.65	min/assy	()	M7)
	(134030-2)	16	, 32	5.65	min/assy	(1	47)
	(134030-3)	16	, 32		min/assy	(1	47)
134036-0001			50		min/assy	(1	17)
136540-0001		30,	31, 30		min/assy	(1	47)
135820-0003	(135845-1)		44	7.61	min/assy	(1	47)
135820-0004	(135845-1)		44	7.61	min/assy	(1	47)
136580-0001	(136581-1)	40	, 20		min/assy	()	(7)
133490-0001			15		min/assy	()	47)
133490-0002			15	0.42	min/assy	()	47)

COUNTERNEASURES ASSENDLY INPROVENENTS PROJECT

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ATTACHERT N - SAVINGS CALCULATIONS

CABLESCAN (uses *** marked part f from Attachment G)

187 101. Sav. Units 101. Sav.						F16					USAF				T. MAN. 3		
13499-0001 4.5	•	art Braher			982	98.	1	19.	-	88	98,		18,	58,	98.	18,	1
13499-000 .42	=				101.304.	Units lot. Sav	<u>.</u>	ts Tot. Sav.	Parts 1	Tot. Sav.	Units Tot.5	Pa.	its Tot. Sav.	Units Tot. Sav.	Units Tot. Sav.	Units Tot.S	l <u>≥</u> i
13402-0001 -42		131000	;														
2 .42 134001-0001 4.6 117 538.2 179 823.4 134025-0001 5.65 2 5.65 72 406.8 2 5.65 72 406.8 134025-0001 10.15 135800-0002 4.65 135800-0001 5.29 136580-0001 7.18 10141 Hinutes 945.0 -0 -0 -4068.56 192.1 -0 -0 -0 -4068.56 192.1 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0		133490-0001	· 4 5							18.06		-					
134025-0001 4.6 117 538.2 179 823.4		~	₹.							57.12							
134025-0001 5.65 12 406.8 1 78 440.7 34 192.7 1 72 130.8 2 15.22		134001-0001	9.	117	538.2					823.4							
2 5.65 72 406.8			5.65							7							
10.15 10.15 10.15 7.61 7.61 4.65 3.89 9.52 7.18 1.18 1 7.18 1 7.18 1.20 -0- 4068.56 197.1 -0000000000	8		5.65	72	406.8					7 077							
10.15 7.61 7.61 7.61 4.65 3.89 5.52 7.18 7.18 7.18 7.18 7.18 7.18 7.18 7.18		E.	5.65					-				-					
7.61 7.61 4.65 4.65 3.89 9.52 7.18 11 7.18 141vtes 945.0 -0 -0 - 4068.58 192.1 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0		134036-0001	10,15							7.30 B							
7.61 4.65 4.65 3.89 3.89 9.52 7.18 1 7.18 1410tes 945.0 -00- 4068.58 192.1 -0000000000		135820-0003	7.61														
4.65 3.89 2.3 89.47 9.52 7.18 1 7.18 409 1901.85 23 89.47 1 7.18 1 7.18 67.8 192.1 67.8 1.2		•	7.61											2 15.22			
3.89 2.3 9.52 7.18 1 7.18 11 7.18 41nutes 945.0 -0- 4068.58 192.1 -0000000000		135890-0002	4.65						604	901.85				2 15.22			
9.52 7.18 7.18 1 7.18 41nutes 945.0 -00- 4068.58 192.1 -0000000000		1	3.89							80 47							
7.18 11 7.18 141nutes 945.0 -00- 4068.58 192.1 -0000000000	-	136540-0001	9.52							÷							
945.0 -00- 4068.58 192.1 -0000000000		136580-0001	7.18			-			-	7.18							
15.8 67.8 3.2 .5 .5		TOTAL MIR	nutes	945	0	ó		÷	4068	85	165		c				
		¥.	s	15	80				. 19	.	3.2		·0	'n	ė	ò	÷

'85 • 84.1 '86 • 3.2

COUNTERMEASURES ASSENBLY INPROVENENTS PROJECT

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ATTACHENT N - SAVINGS CALCULATIONS

CABLESCAN (uses """ marked part # from Attachment G)

'87 15 Jot. Sav.		44 18.48	44 202.4	44 248.2	44 446.60	35 266.35	35 266.35				1448.4
'85 '86 '97 Units lot.Sav. Units lot.Sav. Units lot.Sav.		•	•	•		464.21					928.42 15.5
Sav. Units						59	5				6
'85 Units Tot.											6 -
'87 '8 Tot. Sav.								1 051	637 84	481.06	1469.0
를								ş	2	. .	
USAF '86 ts Tot.Sav								150.1	26 247.53	186.68	784.3
								8	~ ~	%	
'85 '87 '87 'B1 '87 '87 'B1											ė.
'87 Units Tot.Sav.							1980.9				33.0
Units							426				•
F16 '86 Units Tot.Sav.							892.8				14.9
							192				_
'85 Units lot, Sav.											ė.
Minutes	24.	4.6	5.65	10.15	7.61	7.61	4.65	3.89	9.52	7.18	iutes
Part Number PROPOSED	133490-0001	134001-0001	134025-0001	134036-0001	135820-0003	•	135890-0002	ĵ	136540-0001	136580-0001	TOTAL Minutes Hours
<u> </u>			5	9							

- 125.4 '86 - 43.5 '87 - 81.9

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

ATTACHMENT H - SAVINGS CALCULATIONS

	INST SAVI			PROPOSED SAVINGS	
	1985	1986	1986	1987	1988-91
F16 Stockroom relocation	135.9 hrs		135.9 hrs	135.9 hrs	Same hours
① 23% S7	x \$ 9.92		x \$10.42	x \$10.94	as '87 with rates *1.05
Sort parts at workstation	\$1348 97.3		<u>\$1415</u> 97.3	\$1486 97.3	for PSI
M7	x \$ 5.92		x \$ 6.22	x \$ 6.53	
	\$ 576		\$ 605	\$ 635	
Cablescan	15.8		14.9	33.0	
M7	<u>x \$ 5.92</u>		x \$ 6.22	x \$ 6.53	
	\$ 94		\$ 93	\$ 215	
Staging method change	4.8		4.8	4.8	
\$7	x \$ 9.92		x \$10.42	x \$10.94	
·	\$ 48		\$ 50	\$ 52	
TOTAL	\$2066		\$2163	\$2388	
<u>USAF</u> Stockroom relocation	301.4 hrs		301.4 hrs	301.4 hrs	
① 51% S7	x \$ 9.92		x \$10.42	x \$10.94	
	\$2990		\$ 3139	\$ 3296	
Sort parts at workstation	215.7		215.7	215.7	
M7	x \$ 5.92		x \$ 6.22	<u>x \$ 6.53</u>	
	\$1277		\$1341	\$1408	
Cablescan	67.8	3.2	13.1	24.8	
М7	x \$ 5.92	x \$ 6.22	x \$ 6.22	x \$ 6.53	
	\$ 401	\$ 20	\$ 81	\$ 162	
Staging method change	10.7		10.7	10.7	
\$ 7	x \$ 9.92		x \$10.42	x \$10.94	
	\$ 106		\$ 111	\$ 117	
TOTAL	<u>\$4774</u>	\$ 20	\$4672	\$4983	

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT

ATTACHMENT H - SAVINGS CALCULATIONS

COMM'L	Stockroom relocation	153.7 hrs	153.7 hrs	153.7 hrs
1 26%	S7	x \$ 9.92	x \$10.42	x \$10.94
		\$1525	\$1601	\$1681
	Sort parts at workstation	110.0	110.0	110.0
	M7	x \$ 5.92	x \$ 6.22	x \$ 6.53
		\$ 651	\$ 684	\$ 718
	Cablescan	.5	15.5	24.1
	M7	x \$ 5.92	x \$ 6.22	x \$ 6.53
		<u>\$</u> 3	\$ 96	\$ 157
	Staging method change	5.5	5.5	5.5
	S 7	x \$ 9.92	x \$10.42	x \$10.94
		\$ 55	\$ 57	\$ 60
	TOTAL	\$2234	\$2438	\$2616

T's based on total Countermeasures Assembly LRU's in 1985; Category (ex F16)/Total.
See Attachment G. % used on all but Cablescan savings.

 $\hbox{\it Cablescan savings uses asterisked parts shown on Attachment G and hours saved calculations on prior page. } \\$

VOLUME II

CONTRACT	PRICING PROPOSAL COVER SHEET	1. SOLICITATION/CONT NO. P.O. #1005205		ATION FORM APPR OMB NO. 3090-0	
NOTE: This form is u	sed in contract actions if submission of cost or pricing dat				
NAME AND ADDR	ESS OF OFFEROR (Include ZIP Code)	3A. NAME AND TITLE O	F OFFEROR'S P	OINT 38. TELEPH	ONE NO.
		Ralph G. Leigh	. Special A	iss't Fig. oor	0100
Trac	or Aerospace Austin, Inc.	to Div. V.P.,		512-929	1-2192
	Tracor Lane			ACTION (Check)	
	in, Texas 78725	A NEW CONTRACT		D. LETTER CONTRA	ACT
MUSI	.III, 18x45 70723	X B. CHANGE ORDER		E. UNPRICED ORDE	R
		C. PRICE REVISION/		F. OTHER (Specify)	
		REDETERMINATI			
TYPE OF CONTRA	ACT (Check)	6.	PROPOSED COS	T (A+B=C)	
X FFP	CPFF CPIF CPAF	A. COST	B. PROFIT/FEE	C. TOTAL	
FP1	OTHER (Specify)	\$ N/A	\$ N/A	\\$ N	/A
PLACE(S) AND PE	RIOD(S) OF PERFORMANCE				
Austin, Te	xas				
List and reference to quired unless otherw	he identification, quantity and total price proposed for ea wise specified by the Contracting Officer. (Continue on re	ach contract line item. A lii everse, and then on plain pa	ne item cost break per, if necessary.	down supporting this : Use same headings.)	recap is re-
A. LINE ITEM NO.	B. IDENTIFICATION		C. QUANTITY	D' TOTAL PRICE	E. REF
03	Phase 3/Category 1 Countermeasur			[}
	Impro	ovements Project			İ
	Gross Savings			184,415	Vol. I
	di 033 Savings			101,110	
	DoD Share of Savings			159,235	Vol. I
	bob share or savings			133,233	10 .1
	Subcontractor Productivity Savin	nas Roward			
	(w/ Option 3 Payments)	nys Kemaru		39,269	[Vol.]
	(w/ uption 3 Payments)			33,203	101.5
			}		
	9 PROVIDE NAME, ADDRESS, AND TELEPHO	NE NUMBER FOR THE F	OLLOWING (If a	unilable i	
CONTRACT ADM	INISTRATION OFFICE	B. AUDIT OFFICE	022011110 117 0		
	lent Office	DCAA Regional	Office		
	yd Billiter	J. R. Walters			
6500 Traco	~	6500 Tracor L	•		
		Austin, Texas			
	IXAS 78725 THE THE USE OF ANY GOVERNMENT PROPERTY	11A. DO YOU REQUIRE		B TYPE OF FINANC	ING to one
IN THE PERFOR	MANCE OF THIS WORK? (If "Yes," Identify)	MENT CONTRACT	FINANCING	T ADVANCE	PROGRE
		CONTRACT! (If "Y	es," complete	PAYMENTS	
			17	GUARANTEED L	
YES X NO	NAWARDED ANY CONTRACTS OR SUBCONTRACTS	YES X NO	CONSISTENT		
FOR THE SAME	OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS?	MATING AND ACCO	OUNTING PRACT	ICES AND PROCEDU	RES AND
<u>س</u> ر	ilem(s), customer(s) and contract number(s))	J CD	- AUTOFEED' (I)	MO, EXPMIN	
X YES NO		X YES NO			
Block Fabr	cication Improvements				
	op Improvements				
	4. COST ACCOUNTING STANDARDS BOARD (CASB)				
	RACT ACTION BE SUBJECT TO CASE REGULA- explain in proposal)	B HAVE YOU SUBMIT	""Yes." apecify in	proposal the office to	which
ш <u> </u>		submitted and if deter			
X YES NO		X YES NO	See Block		
COMPLIANCE WIT	NOTIFIED THAT YOU ARE OR MAY BE IN NON- 'H YOUR DISCLOSURE STATEMENT OR COST	D. IS ANY ASPECT OF	CES OR APPLICA	ABLE COST ACCOUN	H YOUR
ACCOUNTING ST	ANDARDS? (If "Yes," explain in proposal)	STANDARDS! (II "Ye	ts," explain in pro	Posal)	
X YES NO		YES X NO			<u></u>
	bmitted in response to the RFP contract, modification, et	to in Item 1 and reflects ou	ir best estimates ar	nd/or actual costs as of	this date
S. NAME AND TITL	E (Type)	16. NAME OF FIRM			
Ralph G. Le Division Vi	eigh, Special Assistant to ice President, Contracts	Tracor Aer	ospace Ausi	tin, Inc.	
7. SIGNATURE	// /: 1	* · · · · · · · · · · · · · · · · · · ·		18. DATE OF SUBM	ISSION
1	// . // //			2/ 14	1005
ľ	auch + '-X			24 May	1207
NSN 7540-01-142-984	15			CTANDADD FOO	
NSN 7540-01-142-984	agashis f.	1.101		24 May	_

INDUSTRIAL MODERNIZATION PROGRAM INTERNAL RATE OF RETURN MODEL RESULTS IMODEL THIRRS USING CMASSY7?

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VOLUIE II

1988 686 25,862 25,862 14.128 000 0 0 1987 00 24,631 1,371 24,631 7.70x 1986 0 000 0 00 COUNTERMEASURES ASSEMBLY IMPROVEMENTS 0 23,202 23,134 7,045 7,113 1,842 .00% 1985 25,370 16,241 38,220 15,830 3,123 1,584 14,246 54,050 .001 25,112 7,045 32,157 # # AFTER APPLYING PER CENT DOD BUSINESS IOTAL CAPITAL TAFTER % DOD BUSINESS! IOTAL NON RECOVERED EXPENSED COST WITH SALES TAX & MTL OVERHEAD PUDGETED & RECOVERED EXPENSED BUDGETED & RECOVERED CAPITAL CAPITALIZED EQUIPMENT TOTAL RECOVERED EXPENSED COST SUBCONTRACTOR BEFORE TAX IRR COST OF CAPITALIZED LABOR (MITH OPTION 3 PAYMENTS) CAPITALIZED OTHER SUBCONT SHARE OF SAVINGS UNRECOVERED EXPENSE TOTAL EXPENSED COST OPTIONS PAYMENTS TOTAL INVESTMENT INVESTMENTS TOTAL SAVINGS COM RECOVERY UND SHARE COST OF 9 C051

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INDUSTRIAL MODERNIZATION PROGRAM Internal rate of return model resu (Model thirrs using chassy?)	DUSTRIAL MODERNIZAT RNAL RATE OF RETURN (MODEL TMIRRS USING	_	ON PROGRAM MODEL RESULTS CHASSY7)				
COUNTERMEASURES ASSEMBLY	ES ASSEMBL		IMPROVEMENTS				
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1989	1990	۱ ۱	1991	•	TOTAL
INVESTMENTS BUDGETED & RECOVERED CAPITAL COST OF CAPITALIZED LABOR COST OF CAPITALIZED EQUIPMENT COST OF CAPITALIZED OTHER	***	000	000				1
WITH SALES TAX & MTL OVERHEAD Total Capital (After & Dod Business)	•	•		, •	0	•	38,220
BUDGETED & RECOVERED EXPENSED AFTER APPLYING PER CENT DOD BUSINESS TOTAL RECOVERED EXPENSED COST	•		0	•	0	•	1,584
UNRECOVERED EXPENSE Total non recovered expensed cost	•	0	•	•	0	•	14,246
TOTAL EXPENSED COST Total investment	w w	00			00	• •	15,830 54,050
TOTAL SAVINGS DOD SHARE OPTIONS PAYMENTS SUBCONT SHARE OF SAVINGS IWITH OPTION 3 PAYMENTS) COM RECOVERY SUBCONTRACTOR BEFORE TAX IRR	\$ 27,856 \$ 27,156 \$ 0 \$ 0 \$ 17,978	156 9 156 9 0 8 0 8 (3) 8	28,513 28,513 0 0 0 (696)	**************************************	29,939 29,939 0 0 (1,395) 21.70x	****	184,415 159+235 14,090 39,269 1,849

PAGE 1 05/23/85 13:09

INDUSTRIAL TECHNOLOGY MODERNIZATION PROGRAM INTERNAL RATE OF RETURN MODEL RESULTS (MODEL THIRRS USING CMASSYT)

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COUNTERMEASURES ASSEMBLY IMPROVEMENTS

		1985		1986		1981		1988	
	i	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	•		i		i	1 1 1 1	
DOD SHARE TOTAL BUSINESS		80.00 %	•	80.00 %	×	\$ 00.00	*	80.00	*
DOD SHARE OF SAVINGS		100.00	*	100.00	*	100.00		100.00	øŧ
INSTANT F16 (COST)	•	6,204	•	0	•	0	•	0	
FOLLOWON FIG (COST)	•	0	•	5,982	•	6,570	•	66849	
INSTANT OTHER DOD (COST)	•	14,337	•	55	•	0	•		
FOLLOWON OTHER DOD (COST)	•	0	*	12,921	•	13,710	•	14,395	
INSTANT F16 (SELL)	•	7,585	•	0	w	0	•	٥	
FOLLOWON F16 (SELL)	•	0	•	7,321	•	7,980	•	8,379	
INSTANT OTHER DOD (SELL)	•	17,527	•	99	•	0	•	0	
FOLLOWON OTHER DOD (SELL)	•	0	•	15,813	•	16,651	•	17,484	
RECOVERED INDIRECT	•	1,584	•	0	•	0	•	0	
RECOVERED DEPR (CAS 409)	•	4,914	•	4,914	•	4,914	•	4,914	
UNRECOVERED INDIRECT	~	14,246	•	0	•	0	•	0	

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INDUSTRIAL TECHNOLOGY MODERNIZATION PROGRAM INTERNAL RATE OF RETURN MODEL RESULTS (MODEL THIRRS USING CMASSYT)

COUNTERMEASURES ASSEMBLY IMPROVEMENTS

TOTAL

1991

1990

1989

DOD SHAPE TOTAL BUSINESS 80.00 % 80.00 % 80.00 % DOD SHARE OF SAVINGS 100.00 % 100.00 % 100.00 % INSTANT FIG (COST) \$ 7,293 % 7,606 % 7,986 % FOLL OWON FIG (COST) \$ 7,293 % 7,606 % 7,986 % INSTANT OTHER DOD (COST) \$ 15,115 % 15,871 % 16,664 % FOLL OWON OTHER DOD (COST) \$ 15,115 % 15,871 % 16,664 % FOLL OWON FIG (SELL) \$ 15,115 % \$ 15,871 % 16,664 % FOLL OWON FIG (SELL) \$ 15,115 % \$ 15,871 % 16,664 % FOLL OWON FIG (SELL) \$ 15,115 % \$ 15,871 % 16,664 % FOLL OWON FIG (SELL) \$ 15,115 % \$ 15,871 % \$ 16,664 % FOLL OWON FIG (SELL) \$ 18,356 % \$ 9,236 % \$ 9,699 % FOLL OWON OTHER DOD (SELL) \$ 18,356 % \$ 19,276 % \$ 20,240 % FOLL OWON OTHER DOD (SELL) \$ 6 \$ 6 \$ 6 RECOVERED DEPRICED INDIRECT \$ 4,914 % \$ 4,914 % B \$ 0 \$ 0 \$ 0 B		6,204	14,392	7,585	17,595	1,584 34,398 14,246
80.00 % 80.00 % 100.00 % 100.00 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 %	~ #	• •	~ ~	w ,w	.	
80.00 % 5	80.00	7,986	16,664	0 699	20,240	0 4.914
80.00 % 5		• •	~ ~	w w	~ • •	
******	80.00 100.00	7,606	0 15,871	U 9,238	19,276	* 6 · #
*****		• •	. .	• •	. u	
E TOTAL BUSINESS E OF SAVINGS F16 (COST) SOTHER DOD (COST) OTHER DOD (COST) F16 (SELL) F16 (SELL) OTHER DOD (SELL) SOTHER DOD (SELL) OTHER DOD (SELL) SOTHER DOD (SELL) SOTHER DOD (SELL) OTHER DOD (SELL) SOTHER DOD (SELL)	80.00	7,243	0 15,115	0 8,798	18,358	4,914
	F TOTAL BUSINESS F OF SAVINGS	Fig (COST)	OTHER DOD (COST) S	Fig (SELL)	OTHER DOD (SELL) SOTHER DOD (SELL) SOTHER DOD (SELL) SOTHER DO INDIRECT	RECOVERED DEPR (CAS 409) S UNRECOVERED INDIRECT S

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F SIX FOLLOW ON DIRECT DOLLAR SAVINGS = 0,2163,2388,PREVIOUS * 1.05 FOR 4,0 OTHER DOD INSTANT DIRECT DOLLAR SAVINGS = 4774,20,0 OTHER DOD FOLLOW ON DIRECT DOLLAR SAVINGS = 0,4672,4983,PREVIOUS * 1.05 FOR 4,0 GOVT INSTANT DIRECT DOLLAR SAVINGS = 6840,20,0 GOVT FOLLOW ON DIRECT DOLLAR SAVINGS = 0,6835,7371,PREVIOUS + 1.05 FOR 4,0 COMMERCIAL DIRECT BOLLAR SAVINGS = 2234,2438,2616,PREVIOUS + 1.05 FOR 4,0 MICRO EVEARSE 1985, 1986, 1987, 1988, 1989, 1990, 1991, TOTALE CTECOUNTERMEASURES ASSEMBLY IHPROVEMENTS NONRECOVERED EXPENSED COSTS = 17807,0 F SIX INSTANT DIRECT DOLLAR SAVINGS = 2066,0 CAPITALIZED EQUIPMENT = 16241,0 DIRECT VARIABLE LABOR DOLLARS SAVED = 1 ELEMENT IFASMJ. CMASSY7 05/23/85 13:10 DIRECT FIXED LABOR DOLLARS SAVED = D COST OF CAPITALIZED LABOR = 25370,0 NON RECOVERED CAPITALIZED COSTS = 0 COST OF CAPITALIZED OTHER = 3123,0 RECOVERED EXPENSED COSTS = 1980,0 HFG COM RATE =.19577,.18162,.16015 ENG COM RATE = 0 GA COM RATE = .00851+.00952+.00734 OPTIONS PAYMENTS = 7045,7045,0 AVERAGE DIRECT LABOR RATE = 1 SALES TAX RATE = .05125 6A RATE =.164..162,.156 PER CENT DOD BUSINESS = MATERIAL COST SAVED = 0 YEAR = 1985, PREVIOUS + INCOME TAX RATE = .46 MICRO &COLUMNS-1666 MFG RATE = 1.58,1.38 INSTANT DOD FACTOR = = .12125 DISCOUNT RATE = .12 HICRO ECOLUMNSETE EQUIPMENT LIFE = 5 MH COM RATE = 0 END OF DATAFILE FEE RATE : .15 = .12 ENG RATE = 0 EQUIP LIFE SL • COM FACTOR DOD FACTOR ITC RATE = MH RATE **COS** 7

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Tracor, Inc 6500 Tracor Lane Austin Texas 78721 Telephone 512 926 2800

January 10, 1986

RGL-86-01-10

General Dynamics
Fort Worth Division
P. O. Box 748
Fort Worth, Texas 76101

Attention: Harvey Patton, MZ #1400/Dept. 082

ITM Program Administrator

SUBJECT: Revision "C" Pages to Countermeasures Assembly

Improvements Project Proposal and Tracor's Responses

To Questions Raised During December 9-11, 1985 Fact Finding on Coordinate Measuring Machine

and Finishing Shop Project

Gentlemen:

Enclosed are our responses to the questions you raised during Fact Finding. The responses have been segregated by major topic, information provided during Fact Finding, responses provided herein, and other data to follow.

Responses Concerning General Program

Provided during Fact Finding:

o 4th. Quarter, 1985 Bid Package dated October 31, 1985. Provided herein:

GP-1 Amendment to 4th. Quarter Bid Package dated December 17, 1985.

GP-2 Procedure for going from Tracor model to Form 1411. Data to follow:

o Memorandum of Negotiations on 4th. Quarter Bid Package.



Volume I-Attachments A, G, and H. Volume II-All Pages.

CAI-2 Summary of Reasons for Changes to Proposal.

General Dynamics January 10, 1986 Page 2

Responses concerning Coordinate Measuring Machine

Provided during Fact Finding:

o Direct #'s sheet (prepared by Project Investigator) representing project savings.

Provided herein:

CMM-1 Cost sheet showing overall program investment.

Responses concerning Finishing Shop Proposal (Revision A) Provided during Fact Finding:

- o Tracor IFPS IRR Model TMIRR5 Results Reports for datafiles FINSHP11 and FINSHP12, reports dated December 10, 1985.
- o GD DCF Model report using FINSHP11 data of December 10.
- o November 1985 Act/Bud for Construction In Progress (CIP) 905 and 905-01.
- o Cost of Projects (COP) September 30 and November 30, 1985 for CIP 905.
- o Labor estimates dated October 22, and December 5, 1985 from Pat Casey.
- o Monthly labor run for CIP 905 dated November 23, 1985.
- o Tracor Manufacturing Control System (TMCS) printouts for equipment (supports p.109 data); also some invoices, PR's, and PO's.
- o OHYTDC dated September 30, 1985 and Overhead Charges Reports for 1984 to support p.110 data.
- o FIR 85-092 with allocation sheets.
- o Example of Production Work Order (PWO) for PN 134008-0001, Breech Plate. (4pp.)
- o MTS calculations ("before" and "after") for Chem-Film, Anodize, Passivation, and Painting. (28pp.)
- o MTS Standards for various work elements. (lp)

Provided herein:

- FS-1 Updated FIR 85-092 allocation schedule for Finishing Shop Project.
- FS-2 Updated OHYTDC (November 1985) to support Finishing Shop expensed charges.
- FS-3 Disposition of Equipment being replaced in Finishing Shop.
- FS-4 Paint consumption during 24 months period. (1p.) Back-up for p.98 of proposal.
- FS-5 Calculation of percent savings in the 12 main routing patterns (12pp.). Back-up for savings percentages on p.89 of proposal.
- FS-6 Copy of instructions used to enter proposed build quantities into computer. (2pp.) Referred to on p.95 of proposal.

General Dynamics January 10, 1986 Page 3

FS-7 Approximate annual chem-film production based on chem-film work in various routing patterns. (lp.) Referred to on p.16 of proposal.

FS-8 Printout of savings per deliverable LRU. (229pp.)

FS-9 Printout of man-hour savings, Finishing Shop, by customer category (F-16, USAF, DoD, Com'1), by year (1986-1993), including Instant and Follow-On.

Data to follow will be submitted under Revision "B" to the proposal:

o Updates to I.R.R. model.

If you desire additional information, please let us know.

Sincerely,

Ralph G. Leigh

Manager, General Contracts

Administration

/bc

Tracor Aerospace Aerospace Austin

Revision C

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT Phase III Proposal

Attachment A - Project Economic Summary

Implementation Date:		Jan 86
Man-Hour Savings	Instant F-16	169.0
_	Future F-16	1,006.6
	Instant Other DoD	1,946.9
	Future Other DoD	5,068.9
	TOTAL	8,191.4
Labor and Material	Instant F-16	\$ 5,337
Savings (Loaded \$'s	Future F-16	\$ 39,056
thru fees)	Instant Other DoD	\$ 55,843
	Future Other DoD	\$ 144,071
	TOTAL	\$ 244,307
Internal Rate of Return		
(Before tax in 4th y	rear)	20.0%
Subcontractors Capital F	unds:	\$ 27,181
Subcontractors Related F	unds:	\$ 11,698
DoD Funds:		\$

Tracor Aerospace Aerospace Austin

Summary of \triangle 's to CM Assy Proposal 905-1063B

- o Cablescan savings Due to rate changes, implementation date, and Instant vs F-0 allocation.
- o Other savings Due to rate changes, implementation date, Instant vs F-0 allocation, and changes in the F-16, other Govt, and Commercial Savings allocations.

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHMENT G - MANUFACTURING SCHEDULES

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COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHMENT G - MANUFACTURING SCHEDULES (CONT.)

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COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHMENT G - MANUFACTURING SCHEDULES (CONT.)

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COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHMENT G - MANUFACTURING SCHEDULES (CONT.)

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COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHMENT G - MANUFACTURING SCHEDULES (CONT.)

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Revision C

ATTACHMENT G

COUNTERMEASURES ASSEMBLY ALLOCATION %'s OF BUILD SCHEDULE

	1985	1986	1987	1988	1989	1990
Instant						
F-16	30	227	1574	37		
	1%	1.5%	14%	.5%		
Other DoD	2284	10917	3179	2142	695	
	86%	69.5%	27%	25%	10%	
Commercial	348	3757	538			
	13%	24%	5%			
Follow-On						
F-16		223	1317	1317D	1317	1317 ^D
		1.5%	11%	15%	19%	21%
Other DoD		360	3710	3710 ^Î	3710 ^D	3710 ^D
		2%	32%	43.5%	52%	58€
Commercial		232	1332	1332 ^D	1332	1332 ^I
		1.5%	11%	16%	19%	21%

¹ Assumes on going level of effort

NOTES: o 1985 is 1/3 (7/85-12/85) of total '85 Build.

o Instant #'s from Pat Casey's 10/4/85 computer run and isolates LRU's for CM.

o Follow-On #'s from Mike Andrews' worksheets dated 9-26-85.

Tracor Aerospace Aerospace Austin

Revision C

PLEX	SCHEDULE
12-	-23-85

<u>Ouantities</u>		1986	1987	1988-92	Test Time Per Part in Hours
141203-0001	Instant	653	128	0	.08
	F-0	190	894	1022	
141206-0001	Instant	653	128	0	.07
	F-0	190	894	1022	
141209-0001	Instant	653	128	0	.14
	F-0	190	894	1022	
141210-0001	Instant	653 190	128 894	0 1622	.08
		100	0,74	# U & #	
Test Time in					
Hours Per Year:	Instant	241.6	47.4	0	
	F-0	70.3	330.8	378.1	

NOTE: All F-15, No foreign.

COUNTERNEASURES ASSEMPLY IMPROVEMENTS PROJECT ATTACHMENT H - SAVINSS CALCULATIONS | |

1905 1906 1907 1906 1909 1906 1907 1908 1909				INSTANT	:			,		FOLLOW-ON SAVINGS	;		
Colonic Colo		1985	1986	1987	1988	1989	1986	1987	1988	1989	1990	1991	1922
X	F-16												
x \$ 10,31 x \$ 10,71 x \$ 11,42 x \$ 12,10 x \$ 12,10 x \$ 12,10 x \$ 13,60 x \$ 14,41 x \$ 14,10 \$ 11,12 x \$ 12,10 x \$ 14,41 x \$ 12,10 x \$ 12,10 <th< th=""><th>Stockroom relocation</th><th>√2.0 hrs</th><th>.8.9 hrs</th><th></th><th>3.0 hrs</th><th></th><th>18.9 hrs</th><th>65.0 hrs</th><th>88.7 hrs</th><th>312.3 hrs</th><th>124.1 hrs</th><th>124.1 hrs</th><th></th></th<>	Stockroom relocation	√2.0 hrs	.8.9 hrs		3.0 hrs		18.9 hrs	65.0 hrs	88.7 hrs	312.3 hrs	124.1 hrs	124.1 hrs	
\$ 21 \$ 96 \$ 94 \$ 10.73 \$ 1,789	S	x \$ 10,31	x \$ 10.77	x \$ 11.42	x \$ 12.10	<u>×</u>	\$ 10.77	x \$ 11.42	x \$ 12.10	x \$ 12.83	x \$ 13.60	x \$ 14.41	x \$ 15.27
1.4 1.6.3 1.59.2 2.1		\$ 21	96 \$	\$ 944			96 \$	\$ 742	\$1,073	\$1,440	\$1,688	\$1,789	\$1,269
x \$ 6.13 x \$ 6.40 x \$ 6.79 x \$ 7.20 x \$ 1.61	Sort parts at workstation		16.3	59.2	7.1		6.3	46.5	63.5	₩0.4	88.8	88.8	59.5
\$ 9 \$ \$ 40 \$ \$ 402 \$ \$ 15 \$ \$ 15 \$ \$ 40 \$ \$ 116 \$ \$ 457 \$ \$ 6113 \$ \$ 718 \$ \$ 714 \$ \$ 1.3 \$ 2.9 \$ 1.3 \$ 2.9 \$ 1.3 \$ 2.9 \$ 1.3 \$ 2.9 \$ 1.3 \$ 2.9 \$ 1.3 \$ 2.9 \$ 1.3 \$ 2.9 \$ 1.4 \$ 2.9 \$ 1.4 \$ 2.9 \$ 1.4 \$ 2.9 \$ 1.4 \$ 2.9 \$ 1.4 \$ 2.9 \$ 1.4 \$ 2.9 \$ 1.4 \$ 2.9 \$ 2.9 \$ 2.1 \$ 2.9 \$ 2.9 \$ 2.1 \$ 2.9 \$ 2.0 \$	M	x \$ 6.13	×\$ 6.40	62.9 \$ ×	S	<u>*</u>	\$ 6.40		x \$ 7.20	x \$ 7.63	x \$ 8.08		80.6 \$ x
1. 1. 1. 1. 1. 1. 1. 1.		6	\$ 40	\$ 402			1	\$ 316	\$ 457	\$ 613	\$ 718	\$ 761	\$ 540
ST x \$ 10,01 x \$ 10,01 x \$ 10,10 x \$ 10,10 x \$ 11,42 x \$ 10,10 x \$ 11,42 x \$ 11,41 x \$ 1	ging method change	٠.	۴,	2,9	٠.		E :	(2.3	3.2	4.0	7.7	1.4.4	3.0
Frozertor 6 3 11 5 139 5 1,379 5 52 52 59 1,1084 5 1,569 5 2,1084 5 1,569 5 2,108 5 2,	SJ	x \$ 10.31	x \$ 10.77	x \$ 11.42			\$ 10.77	x \$ 11.42	x \$ 12.10	x \$ 12.83	x \$ 13.60	x \$ 14.41	x \$ 15.27
relocation 163.4 hrs 410.7 hrs 159.6 hrs 147.8 hrs 59.1 hrs 189.1 hrs 189.1 hrs 257.1 hrs 307.3 hrs 342.8 hrs 342.8 hrs 257.1 hrs 36.40 x \$ 11.42 x \$ 12.10 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 11.42 x \$ 12.83 x \$ 10.77 x \$ 11.42		\$	\$	\$ 33	\$ 1							\$ 63	
relocation 163.4 hrs 410.7 hrs 159.6 hrs 147.8 hrs 59.1 hrs 111.8 hrs 189.1 hrs 257.1 hrs 307.3 hrs 342.8 hrs 342.8 hrs 51.10 t \$12.10 t \$	TOTAL	\$ 31	\$ 139	\$ 1,379				\$ 1,084	\$ 1,569	\$ 2,104	\$ 2,466	\$ 2,613	\$ 1,855
relocation 163.4 hrs 163.6 hrs 147.8 hrs 189.1 hrs 189.1 hrs 257.1 hrs 342.8 hrs 342.8 hrs 342.8 hrs 257.1 hrs 36.4 hrs 189.1 hrs 27 x \$ 10.31 x \$ 10.77 x \$ 11.42 x \$ 12.10 x \$	er Dod				1								
S7 x \$ 10.31 x \$ 10.77 x \$ 11.42 x \$ 12.10 x \$ 11.42 x \$ 12.10 x \$ 11.42 x \$ 11.43 x \$ 1	ckroom relocation	169.4 hrs	410.7 hrs	159.6 hrs	147.8 hrs	59.1 hrs	11.8 hrs	189.1 hrs	257.1 hrs	307.3 hrs	342.8 hrs	342.8 hrs	.229.7 hrs
\$ 1,747 \$ 4,423 \$ 1,823 \$ 1,788 \$ 758 \$ 127 \$ 2,160 \$ 3,110 \$ 3,943 \$ 4,662 \$ 4,942 \$ 1.01.3 \$ 294.0 \$ 114.2 \$ 105.8 \$ 42.3 \$ 8.5 \$ 135.4 \$ 184.0 \$ 220.0 \$ 245.3 \$ 245.3 \$ 1.01.3 \$ 241.6 \$ 1.02.8 \$ 1.0	SI	x \$ 10.31	x \$ 10.77	x \$ 11.42	x \$ 12.10	\$ 12.83	\$ 10.77	x \$ 11.42	x \$ 12,10	x \$ 12.83	x \$ 13.60	x \$ 14.41	x \$ 15.27
E et workstation 121.3 294.0 114.2 105.8 42.3 8.5 J35.4 184.0 220.0 245.3 245.3 M7 x \$ 6.13 x \$ 6.40 x \$ 7.20 x \$ 7.20 x \$ 7.20 x \$ 7.20 x \$ 8.08 x \$ 8.57 x \$ 8.101 9 741.6 47.4 70.3 323 \$ 54 \$ 919 \$ 1,325 \$ 1,679 \$ 1,982 \$ 2,101 199-H7 x \$ 1,882 x \$ 4.08 x \$ 4.08 x \$ 4.35 x \$ 1,947 19-H7 x \$ 10.31 x \$ 10.37 x \$ 11.42 x \$ 12.30 x \$ 14.35 \$ 1,633 \$ 1,947 x \$ 5.15 x \$ 5.15 x \$ 1.947 4 6.0 14.6 5.7 (5.3 2.1 (5.3 x \$ 11.42 x \$ 11.41 x \$ 12.10 x \$ 12.10 x \$ 11.41 x \$ 11.41 x \$ 12.10 x \$ 12.10 x \$ 11.41 x \$ 11.41<		\$ 1,747	\$ 4,423	\$ 1,823	\$ 1,788	\$ 758	\$ 127	\$ 2,160	\$ 3,110	\$ 3,943	\$ 4,662	\$ 4,942	\$ 3,508
HT X \$ 6.13 x \$ 6.40 x \$ 6.79 x \$ 7.20 x \$ 7.63 x \$ 6.79 x \$ 7.20 x \$ 7.63 x \$ 6.79 x \$ 7.20 x \$ 7.63 x \$ 8.57 x \$ 8.51	: parts at workstation	121.3	294.0	114.2	105.8	42.3	8.5	135.4	184.0	220.0	245.3	245.3	164.4
\$ 744 \$ 1,682 \$ 775 \$ 762 \$ 323 \$ 54 \$ 919 \$ 1,325 \$ 1,679 \$ 1,982 \$ 2,101 19-H7 x \$ 3.84 x \$ 4.08 5 928 \$ 193 cthod change 6.0 14.6 5.7 (5.3) x \$ 10.31 x \$ 10.77 x \$ 11.42 x \$ 10.31 x \$ 10.77 x \$ 11.42 x \$ 2,553 \$ 7,529 \$ 4,752 \$ 2,664 \$ 51,108 \$ 5,590 \$ 5,777 \$ 5,1274 \$ 5,590 \$ 5,777 \$ 5,12714 \$ 511,779	£	x \$ _6.13		× \$ 6.79	- 1	1	- 1	8 6.79	x \$ 7.20	x \$ 7.63	x \$ 8.08	x \$ 8.57	80.6 3 x
## 19-PT		\$ 744	\$ 1,882	\$ 775		\$ 323	İ		\$ 1,325	\$ 1,679	\$ 1,982	\$ 2,101	\$ 1,493
x \$ 3.84 x \$ 4.08 x \$ 4.32 x \$ 4.58 x \$ 5.15 x \$ 928 \$ 193 \$ 2.70 \$ 1,350 \$ 1,633 \$ 1,732 \$ 1,838 \$ 1,947 6.0 14.6 5.7 (5.3 2.1 (5.7 9.1 40.9 12.2 12.2 12.2 x \$ 10.31 x \$ 11.42 x \$ 12.10 x \$ 12.83 x \$ 10.77 x \$ 11.42 x \$ 12.10 x \$ 14.41 x 14.6 \$ 14.63 12.2 15.2 \$ 62 \$ 157 \$ 65 \$ 64 \$ 27 \$ 4.56 \$ 4,506 \$ 6,178 \$ 7,494 \$ 8,648 \$ 9,166 \$ 2,584 \$ 7,529 \$ 4,235 \$ 2,666 \$ 1,108 \$ 5,590 \$ 7,747 \$ 9,598 \$ 11,114 \$ 11,779	lescan		241.6	47.4		-	70.3	330.8	.378.1	378.1	378.1	378.1	378.1
\$ 928 \$ 193 \$ 1.93 \$ 270 \$ 1 ₁ 350 \$ 1 ₁ 633 \$ 1 ₁ 732 \$ 1 ₁ 838 \$ 1 ₁ 947 8. 10.0 14.6 5.7 (5.3 2.1)	PH-6H			₹.		_	\$ 3.84	S	x \$ 4.32	x \$ 4.58	x \$ 4.86	x \$ 5.15	x \$ 5.46
6.0 14.6 5.7 (5.3 2.1 (4 6.7 9.1 40.9 12.2 12.2 x \$ 10.31 x \$ 10.77 x \$ 11.42 x \$ 12.10 x \$ 12.10 x \$ 12.83 x \$ 13.60 x \$ 14.41 \$ 62 \$ 157 \$ 65 \$ 64 \$ 27 \$ 4 \$ 77 \$ 110 \$ 140 \$ 146 \$ 176 \$ 2,553 \$ 7,390 \$ 2,856 \$ 2,614 \$ 1,108 \$ 455 \$ 4,506 \$ 6,178 \$ 7,494 \$ 8,648 \$ 9,166 \$ 2,584 \$ 7,529 \$ 4,235 \$ 2,666 \$ 1,108 \$ 5,590 \$ 7,747 \$ 9,598 \$ 11,114 \$ 11,779			\$ 928	\$ 193			\$ 270	\$ 1,350	\$ 1,633	\$ 1,732	\$ 1,838	\$ 1,947	\$ 2.064
x \$ 10.31 x \$ 11.42 x \$ 12.10 x \$ 12.10 x \$ 12.10 x \$ 11.42 x \$ 11.42 x \$ 11.41 x \$ 12.10 x \$ 13.60 x \$ 14.41 \$ 62 \$ 157 \$ 65 \$ 64 \$ 27 \$ 4 \$ 77 \$ 110 \$ 140 \$ 166 \$ 176 \$ 2,553 \$ 7,390 \$ 2,856 \$ 2,614 \$ 1,108 \$ 455 \$ 4,506 \$ 6,178 \$ 7,494 \$ 8,648 \$ 9,166 \$ 2,584 \$ 7,529 \$ 4,235 \$ 2,664 \$ 1,108 \$ 5,594 \$ 5,590 \$ 7,747 \$ 9,598 \$ 11,114 \$ 11,779	ging method change	6.0	14.6	5.7	(5.3	2.1	7	6:3	.9.1	40.9	12.2	12.2	, 8.2
\$ 2,553 \$ 7,390 \$ 2,856 \$ 2,614 \$ 1,108 \$ 455 \$ 4,506 \$ 6,178 \$ 7,494 \$ 8,648 \$ 9,166 \$ 11,779 \$ 2,584 \$ 7,529 \$ 4,215 \$ 2,666 \$ 1,108 \$ 5,590 \$ 5,590 \$ 7,747 \$ 9,598 \$ 11,114 \$ 11,779	<i>\$</i> 1			x \$ 11.42	\$ 12.10	S	\$ 10.77		x \$ 12.10	x \$ 12.83	x \$ 13.60	x \$ 14.41	x \$ 15.27
\$ 2,553 \$ 7,390 \$ 2,856 \$ 2,614 \$ 1,108 \$ 455 \$ 4,506 \$ 6,178 \$ 7,494 \$ 8,648 \$ 9,166 \$ 2,584 \$ 7,529 \$ 4,215 \$ 2,666 \$ 1,108 \$ 5,590 \$ 7,747 \$ 9,598 \$ 11,114 \$ 11,779		~.	\$ 157		\$ 64	. !	\$4	\$	i	- 1	\$ 166	\$ 176	
\$ 2,584 \$ 7,529 \$ 4,235 \$ 2,666 \$ 1,108 \$ 594 \$ 5,590 \$ 7,747 \$ 9,598 \$11,114 \$11,779	TOTAL	\$ 2,553	\$ 7,390	\$ 2,856	\$ 2,614	\$ 1,108		\$ 4,506		\$ 7,494	1	\$ 9.166	
	TOTAL GOVT	\$ 2,584	\$ 7,529	\$ 4,235	\$ 2,666	\$ 1,108	:	\$ 5,590		\$ 9,598	1	\$11,779	•

COUNTERMEASURES ASSEMBLY IMPROVEMENTS PROJECT ATTACHENT H - SAVINES CALCALATIONS (CONT.)

Revision C

261 1920			18 83.1 hrs	12.21 5 X 11	10717 A		\$ 540				
1991		:	124.1 hrs		88		\$ 761			\$ 63	
1990		124 1 5.55	x \$ 13 60 × \$ 14 41	\$ 1.688	88.8	x \$ 8.08	\$ 718	7	x \$ 13.60	\$ 60	\$ 2,466
FOLLOW-ON SAVINGS 1989		112 3 622			80.4		\$ 613	4.0	x \$ 12.83	\$ 51	\$ 2,105
1988		94 6 hre	x \$ 12.10	\$ 1,145	67.7	x \$ 7.20	\$ 487	3.4	x \$ 12.10	\$ 41	\$ 1,673
1987		65.0 hrs	x \$ 11.42	\$ 742	46.5	61.9 \$ x	\$ 316	2.3			\$ 1,084
1986		8.9 hrs	\$ 10.77	96 \$	6.3		\$ 40				
1989			•			*			×		,
1988											
INSTANT SAVINGS 1987		29.6 hrs	x \$ 11.42	\$ 338	21.2	8 6.79	\$ 144	1.1	x \$ 11,42	\$	\$ 495
1986		141.8 hrs	x \$ 10.77	\$ 1,527	101.5	x \$ 6.40	\$ 650	5.0		\$ 24	\$ 2,231
1985		25.6 hrs 1	x \$ 10.31 x	1	n 18.3	x \$ 6.13 x					385
	Connercial	Stockroom relocation	રા		Sort parts at workstation 18.3	¥		staging method change	<i>(</i> 6		NIO.

(1) Aliccations based on total Countermeasures Assembly LRU's in 1985 thru 1989. (see Attach. "G") V's used on all but Cablescan Savings.

NOTE: Hourly rates from 10/31/85 Bid Package, but P.S.I. is from 12/11/85 package submission to DCAS/DCAA. Also, Overhead rates use latter surmission.

Tracor Aerospace Aerospace Austin

Procedure for Going From Tracor Model to Form 1411 Column 8.D.

- o Find the "total" column in the Tracor Model (the 1st results report)
- o Find 4 variables: ① Total Savings
 - ② DoD Share
 - ③ Option 3 payments
 - Subcont Share of Savings (with option 3 payments)
- o ① goes to 1st line of column 8.D.
- o 2 goes to 2nd line of column 8.D.
- o 4 goes to 3rd line of column 8.D.
- 0 (4) (3) + (2) = (1)

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Volume 11 2.0

USTRIAL M NAL PATE MODEL THI	0ER F R R5	IZATION TURN MO SING CM	PRO JEL ASSY	PROGRAM JEL RESULTS ISSY91				
COUNTERMEASURES	V	SEMBLY IN	MPRO) >				
	;	1985	i	1986	;	1987	i	1988
INVESTMENTS								
BUDGETED & RECOVERED CAPITAL COST OF CAPITALIZED LABOR COST OF CAPITALIZED EQUIPMENTING TAX, OH) COST OF CAPITALIZED OTHER IND TAX)	~ ~ ~	13,859 14,826 2,695	~ ~ ~	000	w w w	000	***	000
TOTAL CAPITAL (AFTER % DOD BUSINESS AND WITH SALES TAX AND MTL OH)	~	27,181	•	D	•	0		C
BUDGETED C RECOVERED EXPENSED COSTS TOTAL RECOVERED EXPENSED COST (AFTER & DOD BUSINESS)	مي	D	•	0	•	D	•	0
UNRECOVERED EXPENSE COSTS 101al nov recovered expensed cost	•	11,698	•	0	~	O	4	0
TOTAL EXPENSED COST TOTAL INVESTMENT	~ ~	11,698	~ ~	00	ø •	00		00
TOTAL SAVINGS INO COMM'LI	& •	8,868	~ ~	27,827	~ ~	32,650	~ ~	34,338
SAYMENTS SHARE OF SAVIN	♣ ₩	08,868	• •	25,792	~ ~	14,074	~ ~	0 8,791
N 3 PAYME	•	3.873	₩.	5,681	••	5,423	•	5,423
CON RECOKERY—	. a	6 9	6 A	46	~	22	•	~
SUB INCOME TAKES	p3 w	40 -	ب	99466	• •	4,083		1,441
DEPRECIATION	₩ ₽ ₽	3,405		3,495		646	<i>•</i>	3,49
AFIER	•	6 1 8	٠.	\$ 2.8	، بي	,71	٠,	0,60
	•	(170,12) (170,	•	14,8981		4,961	_p i,	37.012

PAGE 1 01/06/86 12:59

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ITTON PROGRAM	IN MODEL RESULT	IG CHASSY9)
INDUSTRIAL MODERNIZATION	INTERNAL RATE OF RETURN	(MODEL THIRRS USING

COUNTERHEASURES ASSEMBLY IMPROVEMENTS

	(1	35.00.1							
	1	1989	;	1990	į	1991	į	1992	
INVESTMENTS)								
BUDGETED & RECOVERED CAPITAL COST OF CAPITALIZED LABOR COST OF CAPITALIZED EQUIPMENTINO TAX, OH) COST OF CAPITALIZED OTHER INO TAX!	* * *	000	** ** **	000		000	~ ~ ~	000	
TOTAL CAPITAL (AFTER % DOD BUSINESS AND WITH SALES TAX AND MTL OH)	•	D	•	۵	y 4	0	•	0	
RUDGETED & RECOVERED EXPENSED COSTS TOTAL RECOVERED EXPENSED COST (AFTER & DOD BUSINESS)	₩	0	•	0	₩	O	₩	0	
UMRECOVERED EXPENSE COSTS TOTAL NOW RECOVERED EXPENSED COST	~	0	•	0	••	0	••	c	-
TOTAL EXPENSED COST TOTAL INVESTMENT	₩ ₩	00	~ ~	00		00	• •	00	
TOTAL SAVINGS (NO COMM'L)	, ,	35,394	• •	36,649		38,842 38,842	w w	29,827 29,827	•
OPTIONS PAYMENTS SUBCONI SHARE OF SAVINGS	~ ~	3,654	• •	۵۵	6 1 6 1	00	~ ~	00	-
DEPRECIATION (TAX)	٠.	5,423	.	_ a	. ,	4		~	
SUB INCOME TAXES		3	· •	1 (5 4		176	·	(61	
ITC	6 ₁ 6 5	6 7 .	₩ ₩	6 11	, 1 0	6 7 6	e e) 0	
AF TER	٠ ٠٠	7,59	٠,	2,85	, ,	2,59	پ د	171	
	-	39.59	μ	40.19%		40.534	•	40.364	

INDUSTRIAL MODERNIZATION PROGRAM
INTERNAL RATE OF RETURN MODEL RESULTS
(MODEL TMIRRS USING CMASSY9)

5.18 5.18 5.18 5.18 1.10.1.06/86 5.10.1.2:59 COUNTERMEASURES ASSEMBLY IMPROVEMENTS

TOTAL

INVESTMENTS

BUDGETED & RECOVERED CAPITAL COST OF CAPITALIZED LABOR COST OF CAPITALIZED EQUIPMENTING TAX,OH) COST OF CAPITALIZED OTHER ING TAX)	~ ~ ~	13,859 14,826 2,605
TOTAL CAPITAL (AFTER % DOD BUSINESS AND WITH SALES TAX AND 4TL 0H)	~	27,181
BUDGETED & RECOVERED EXPENSED COSTS TOTAL RECOVERED EXPENSED COST TAFTER & DOD BUSINESS)	•	0
UNRECOVERED EXPENSE COSTS TOTAL NON RECOVERED EXPENSED COST	•	11,698
TOTAL EXPENSED COST TOTAL INVESTHENT	~ ~	11,698
TOTAL SAVINGS (NO COMM'L)	•	244,306
PIIONS PAYMENT	•	-
ONIT SH	•	61,179
EPRECIATION (TAX)	~	5,82
RECOVE	•	(3,731)
UB INCOM	•	, 16
~ 4	e r	, 71
BCONT VET CASH FLOW AFT	€ ^	, 7 F
ISCOUNTED CAS	•	æ
ONITRACTOR BEFORE TAX IR		0.36

1.E PAGE 1

2. 4. c 2. 4. c

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INDUSTRIAL TECHNOLOGY MODERNIZATION PROGRAM INTERNAL RATE OF RETURN MODEL RESULTS (MODEL THIRRS USING CMASSY9)

COUNTERMEASURES ASSEMBLY IMPROVEMENTS

1988

1987

1986

1995

*	*												
80.00	103.00	142	4,297	7,159	16,921	171	5,174	8,620	20,373	0	3,495	0	5,423
**	**	~	ø	"	~	•	•	v	•	ø	•	•	ø
8 n • 00	100.00	3,807	2,993	7,886	12,441	4,583	3,602	9,491	14,974	0	3,495	0	5,423
*	×	•	ø,	•	~	•	•	•	•	~	•	۶	~
80.00	105.00	393	393	20,906	1,287	476	476	25,316	1,559	0	3,495	0	5,691
	*	•	•	y 1	~	•	•	~	•	•	•	•	•
80.00	100.00	88	0	7,221	0	106	0	8,762	0	0	3,495	11,698	3,873
		•		y	•	•	•	•	•	•	ø	•	4 4
DOD SHARE TOTAL BUSINESS	SHARE OF SAVINGS	INSTANT F16 (COST)	FOLLOWON FIG (COST)	INSTANT OTHER DOD (COST)	FOLLOWON OTHER DOD (COST)	INSTANT F16 (SELL)	FOLLOWON F16 (SELL)	INSTANT STHER DOD (SELL)	LOWON OTHER DOD (SELL)	RECOVERED INDIRECT	RECOVERED DEPR (CAS 409)	UNRECOVERED INDIRECT	DEPRECIATION (TAX)

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INDUSTRIAL TECHNOLOGY MODERNIZATION PROGRAMINTERNAL RATE OF RETURN MODEL RESULTS (MODEL THIRRS USING CMASSY9)

PROVEMENTS
Y IMP
ASSEMBL
COUNTERMEASURES

1992

1991

1990

1989

80.00	5,081 5,081	19,692	6,117	23,710	000
8 -	, w	6	•	23	
<i>n</i>	~ ~ .	, ,, ,,	.	~ ~	~ ~ ~
87.00 109.00	7,157	25,164	8,617	30,226 0	3,495
<i>H</i> H	~ ~ ·	• • •	~ ~	~ ~	~ ~ ~
80.00 x	6,754	23,686	8,132	28,518 0	3,495
	~ ~ <i>~</i>	· • •	~ ~	~ ~	~ ~ ~
80.00 100.00	0 5,763 3.035	20,525	6,938 3,654	24,712 0	3,495 0 5,423
	مي مي مي	· • •	~ ~	er es	بىي جىي يىي
DOD SHARE TOTAL BUSINESS DOD SHARE OF SAVINGS	FOLLOWON FIG (COST) INSTANT OTHER DOD (COST)	FOLLOWON OTHEP DOD (COST) INSTANT F16 (SELL)	FULLOWON FIG (SELL) INSTANT OTHER DOD (SELL) FOLLOWON OTHER	RECOVERED INDIRECT	RECOVERED DEPR (CAS 409) UNRECOVERED INDIRECT DEPRECIATION (TAX)

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INDUSTRIAL TECHNOLOGY MODERNIZATION PROGRAM Internal rate of Return Hodel Results (Model Thirrs Using Chassy9)

COUNTERMEASURES ASSEMBLY IMPROVEMENTS

TOTAL

1

٦ 1

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SIX FOLLOW ON DIRECT DOLLAR SAVINGS = 0,139,1084,1569,2104,2466,2613,1855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMERCIAL DIRECT DOLLAR SAVINGS = 385,2370,1579,1673,2105,2466,2613,1855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OTHER DOD INSTANT DIRECT DOLLAR SAVINGS = 2553,7390,2856,2614,11198,0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTHER DOD FOLLOW ON DIRECT DOLLAR SAVINGS = 0,455,4506,6178,7494,"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GOVT INSTANT DIRECT JOLLAR SAVINGS = 2584,7529,4235,2666,1108,0
                                                                MICRO EYEARSE1985,1986,1987,1988,1989,1990,1991,1992,TOTALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GOVT FOLLOW ON DIRECT DOLLAR SAVINGS = 0,594,5590,7747,*
                                                                                                                                                                                                                                                                                                                                                               NONRECOVERED EXPENSED COSTS = 14623,0
F SIX INSTANT DIRECT DOLLAR SAVINGS = 31,139,1379,52,0
                              MICRO CPROJECTECOUNTERNEASURES ASSEMBLY IMPROVEMENTSE
                                                                                                                                                                                                                              COST OF CAPITALIZED EQUIPMENT = 14826,0
COST OF CAPITALIZED OTHER = 2605,9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DIRECT VARIABLE LABOR DOLLARS SAVED =
ELEMENT IFPSMJ. CHASSY9 01/06/86 12:58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DIRECT FIXED LABOR DOLLARS SAVED = 0
                                                                                                                                                                                                                                                                                                 NON RECOVERED CAPITALIZED COSTS = 0
                                                                                                                                                                                                COST OF CAPITALIZED LABOR = 13859,0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MFG COM RATE =.16178, .15182, .13292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GA COM RATE = .00713,.00849,.00636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MFG RATE = 1.450,1.420,1.37,1.355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GA RATE = 1545, 1690, 1650, 1630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AVERAGE DIRECT LABOR RATE = 1
                                                                                                                                                                                                                                                                                                                                   RECOVERED EXPENSED COSTS = 0
                                                                                                                                                                SALES TAX RATE = .05125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PER CENT DOD BUSINESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9598, 11114,111779,9045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MCOME TAX RATE = .45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  = 1985, PREVIOUS
                                                                                                                                ECOLUMNS-1676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      = .10375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NSTANT DOD FACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EQUIPMENT LIFE = 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ENG COM RATE = 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MH COM RATE = 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6648,9165,7190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEE RATE = .15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            = .105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOD FACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COM FACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ENG RATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DISCOUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HH RATE
```

EQUIP LIFE SL = 7
MATERIAL COST SAVED = 0
OPTION3 PAYHENTS = D
HH =.115.0
END OF DATAFILE

CREATED	NALYZE	APITAL I	VESTMENT	EGUARD	1 N G	
IAL TECHNOLOG	MODERNIZA	ATION PRO	GRAM ITECH	HOD).		
YEART	1985	1986	1987	1988	1989	1990
DATA ELEMENTS SECTION						
ALES TAX	051	.0513	.0513	.0513	.0513	.0513
OST OF CAPITALIZED LAB	13959					,
OST OF CAPIT	482	0	0	0	0	0
OST OF CAPITALIZED OTH	9	©	0	0	۵	ū
ALES TAX	6	C	0	C	0	0
ALES TAX	<u>~</u>	C.	0	0	0	0
ATERIAL HANDLING	46	د	0	0	0	0
ON RECOVERED CAPITALIZ	0	0	0	0	0	
ECOVERED EXPENSE	0	c	0	0	0	0
ONRECOVERED EXPENSED C	14623	Ξ	0	0	0	0
ATERIAL COST SAVE	0	c	0	0	0	0
SIX INSTANT DIRECT DO	3.1		3.7		0	ū
SIX FOLLOW ON DIREC	0	\sim	1034	56	10	2466
THER DOD INSTANT DIREC	2553	δ	85	9	1.0	C,
THE? DOD FOLLOW ON DIR	0		57		4646	8498
OVT INSTANT DIRECT DOL	2584	2	23	66	CI	0
OMMERCIAL DIPECT DOLLA	\boldsymbol{x}	37	57	67	10	46
OVT FOLLOW ON DIRECT D	0	6	59	74	59	11114
IRECT VARIABLE LABOR D	-			-	-	-
IRECT FIXED LABOR DOLL	0	0	0	C	כ	0
DIRECT LABOR RA	7		-	, ,		-
FG R	1.450	1.420	1.370	1.355	1.355	1,355
NG RAT	0	0				
Z Z	0	.1050	.1050	.1050	.1050	.1050
¥F	.1150					
1 h + C 2 C C C L 1			,	ŀ	ı	•

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- FM OKARX GO # GRO O HUM > - HUAOFI F MMMRR		, (•	. (٠ (٠ (c
### ### ##############################	r 4				,		, ,
OUT LIFE SEE AND SEE A	A 7 4 - C	7 7	> 0 0 0) (0 0		
FE RATE NITARI DO FACTOR NITARI NITARI DO TO	A COM MAIL	00	200	000	900	200	a Cin
MARIA LIFE	001P L1P: 0	(
NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI DOD FACTOR NUTANI RECOVERED FACTOR NUTANI RETOR FULL DATA NUTANI RETOR NUTANI RETOR FULL DATA NUTANI RETURN RETOR FULL DATA NUTANI RETURN RETURN RETURN NUTANI RETURN RETUR	EL MAIL	2	12	- 	0 c T		120
NOTAL BLUGGETED CAPITAL OTAL BUDGETED CAPITA	QUIPMENT LIFE	.	S.	so i	io i	.	4 1 (
NEW PARTIES 1	NSTANT DOD FACTO	0	د ،	0	C	רם י	ο,
NCOME TAX RATE 1038 NCOME TAX RATE 1000	OD FACTOR	-		~	-	~	
MCOME TAX RATE	PTIONS PAYMENT						
NCOME TAX RAIE	OH FACTOR	03	103	103	103	103	103
ICC RATE	NCOME TAX RA	460	460	460	09 h	094	460
SECOND RATE 1200	TC RATE	100	100	100	100	100	100
ER CENT DOD BUSINESS .8000 .80	ISCOUNT RAT	120	120	120	120	120	120
OTAL BUDSETED CAPITAL OTAL NONRECOVERED CAPITAL OTAL NONRECOVERED CAPITAL OTAL NONRECOVERED EXPENSED OTAL NON RECOVERED EXPENSED OTAL NON RECOVERED EXPENSED OTAL NON RECOVERED INVESTME OTAL NON RECOVERED INVESTME OTAL NON RECOVERED INVESTME OTAL RECOVERED INVESTME OTAL NON RECOVERED INVESTME OT	ER CENT DOD BUSINES	800	800	800	800	800	800
OTAL BUDSETED CAPITAL OTAL NONRECOVERED EXPENSED OTAL NONRECOVERED EXPENSED OTAL NON RECOVERED EXPENSED OTAL NON RECOVERED INVESTME 3495 OTAL CAPITAL OTAL EXPENSED COST AND TAPELE LABOR OTAL OTAL CAPITAL OTAL INVESTMENT TAPENSED COST STATEMENT RATIO OTAL CAPITAL OTAL	**************************************	# # #	*	*	4 4 4	₽ ₽	
OTAL RECOVERED EXPENSED OTAL RECOVERED EXPENSED OTAL NON RECOVERED EXPE OTAL NON RECOVERED EXPE OTAL NON RECOVERED INVE STAPS OTAL RECOVERED INVESTME STAPS OTAL NON RECOVERED INVESTME STAPS OTAL NON RECOVERED INVESTME STAPS OTAL NON RECOVERED INVESTME STAPS OTAL NON RECOVERED INVESTME STAPS OTAL NON RECOVERED INVESTME STAPS OTAL NON RECOVERED INVESTME STAPS STAPS OTAL NON RECOVERED INVESTME OTAL DIRECT LABOR DOLLA STAPS OTAL DIRECT LABOR DOLLA STAPS OTAL DIRECT LABOR DOLLA STAPS STAPS STAPS STAPS OTAL DIRECT LABOR		•	•	,	(,	
01AL NOWRECOVERED CAPIT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DIAL BUUSEIEU CAPITAL	8 1 /	ن	5	5	5	ב
OTAL NECOVERED EXPENSED OTAL NOW RECOVERED EXPENSED OTAL NOW RECOVERED EXPE 11693 OTAL NOW RECOVERED INVESTME 34.95 OTAL NOW RATIO OTAL DIRECT LABOR DOLLA 29.69 OTAL DIRECT LABOR DOLLA 29.69 OTAL DIRECT LABOR DOLLA 29.69 OTAL DIRECT LABOR SAVE 29.59 OTAL DIRECT LABOR SAVE 29.69 OTA	OTAL NONRECOVERED CAPI	0	C	0	0	0	0
CONTACT CONT	OTAL RECOVERED EXPENSE	0	C	0	0	0	0
ECOVERED DEPRECIATION 3495 3499	OTAL NON RECOVERED EXP	69	C	0			
OTAL RECOVERED INVESTME 3495 3495 3495 3495 3495 3497 OTAL NON RECOVERED INVE 35384 -3495 -3495 -3495 -3495 -3495 0171	ECOVERED DEPRECIATION	4	49	0	40	¢ 7	ф Т
OTAL NON RECOVERED INVE 35384 -3495 -3495 -3495 -3495 -3499	OTAL RECOVERED INVESTM	6 +	4 9	0	4.9	о т	40
### CAPITAL OTAL CAPITAL OTAL EXPENSED COST 11699 0 0 0 0 0 OTAL INVESTMENT 38879 0 0 0 0 0 ******SAVINGS************************************	OTAL NON RECOVERED INV	538	349	349	349	349	349
######################################	OTAL CAPITAL	718	c	0	0	0	C
### SAVING S************************************	OTAL EXPENSED COS	169	0	0	C	0	Ö
### ### ### ### ### ### ### ### ### ##	OTAL INVESTMEN	887	C	0	0	٥	L
### PATIO CALCULATIONS OTAL VARIABLE LABOR DIR 2969 10493 11494 12086 12811 1358 OMMERCIAL RATIO OWY INSTANT RATIO OVT INSTANT RATIO OVT FOLLOW ON RATIO SIX INSTANT RATIO O .0366 .4972 .6417 .7492 .818 SIX INSTANT RATIO O .2340 .1939 .2025 .2192 .221 THER DOD INSTANT RATIO OT .2340 .1939 .2025 .2192 .221 THER DOD FOLLOW ON RATIO OTAL DIRECT LABOR DOLLA 2969 10493 11474 12086 12811 1358 OTAL DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON MFG DIRECT LABOR SAVE 8930 31493 1516 1606 1703 190	eeeeeeeeSSNIAVSeeeeee	***	***	***	***	ф ф	
OTAL VARIABLE LABOR DIR 2969 10493 11474 12086 12811 13589 1918 OMMERCIAL RATIO	ATIO CALCULATION						
OWMERCIAL RATIO OVT INSTANT RATIO OVT INSTANT RATIO OVT FOLLOW ON RAT	OTAL VARIABLE LABOR DI	96	6 7 0	-	208	281	358
OVT INSTANT RATIO .8703 .7175 .3714 .2206 .0865 OVT FOLLOW ON RATIO 0 .0566 .4972 .6410 .7492 .818 SIX INSTANT RATIO 0 .0120 .0185 .3256 .0195 0 SIX FOLLOW ON RATIO 0 .2340 .1939 .2025 .2192 .221 SIX FOLLOW ON RATIO 0 .2340 .1939 .2025 .2192 .221 THER DOD INSTANT RATIO 0 .2340 .9815 .6744 .9805 .778 THER DOD FOLLOW ON RATIO 0 .7660 .8061 .7975 .7108 .778 ABOR COST SAVINGS OTAL DIRECT LABOR DOLLA 2969 10493 11404 12086 12811 1358 OADED DIRECT LABOR SAVE 8930 31493 33175 34989 36982 3920 OADED DIRECT LABOR SAVE 8930 31493 33175 34989 36982 3920 OM ON MFG DIPECT LABOR 480.3 1593 1516 1606 1703 190 </th <th>OMMERCIAL RATI</th> <th>129</th> <th>225</th> <th>139</th> <th>138</th> <th>164</th> <th>191</th>	OMMERCIAL RATI	129	225	139	138	164	191
OVT FOLLOW ON RATIO .01566 .4972 .6410 .7492 .8188 SIX INSTANFRATIO .0120 .0185 .3256 .0195 0 SIX FOLLOW ON RATIO .0180 .0185 .2340 .1939 .2025 .2192 .221 THER DOD INSTANT RATIO .0800 .09815 .6744 .9805 .1 .1788 THER DOD INSTANT RATIO THER DOD FOLLOW ON RATI .7660 .8061 .7775 .7808 .778 ABOR COST SAVINGS OTAL DIRECT LABOR DOLLA 2969 10493 11404 12086 12811 1358 OTAL DIRECT LABOR SAVE 2969 10493 11404 12086 12811 1358 OADED AVERAGE DIPECT LABOR SAVE 8930 31493 33175 34889 36982 3920 ON ON MFG DIPECT LABOR	OVT INSTANT RATIO	870	717	371	220	086	
SIX INSTANT RATIO SIX INSTANT RATIO SIX FOLLOW ON RATIO O .2340 .1939 .2025 .2192 .221 THER DOD INSTANT RATIO THER DOD INSTANT RATIO OTAL DIRECT LABOR DOLLA OTAL DIRECT LABOR DOLLA OADED AVERAGE DIPECT LA 2.929 OADED AVERAGE DIPECT LABOR SAVE OADED DIRECT LABOR SAVE OADED ON ON MFG DIPECT LABOR SAVE ON ON ON MFG DIPECT LABOR 3 1593 1516 1606 1703 190	OVT FOLLOW ON RATI		056	497	7 4 9	149	818
SIX FOLLOW ON RATIO SIX FOLLOW ON RATIO THER DOD INSTANT RATIO THER DOD INSTANT RATIO THER DOD INSTANT RATIO THER DOD FOLLOW ON RATI ABOR COST SAVINGS OTAL DIRECT LABOR DOLLA 2969 10493 11474 12086 12811 1358 OTAL DIRECT LABOR SAVE OADED AVERAGE DIRECT LA 2.929 2.829 2.751 2.739 2.739 OADED DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON MFG DIRECT LABOR SAVE 1900	SIX INSTANT RATIO	015	018	325	019		
THER DOD INSTANT RATIO	SIX FOLLOW ON RATIO	-	234	193	202	219	221
ABOR COST SAVINGS OTAL DIRECT LABOR DOLLA 2969 10493 11474 12086 12811 1358 OTAL DIRECT SAVED OADED AVERAGE DIPECT LA 2.929 2.829 2.751 2.739 2.73 OADED DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON ON MFG DIPECT LABOR SAVE 480.3 1593 1516 1606 1703 190	THER DOD INSTANT RATI	- αο ≎	981	9 7 4	980		
ABOR COST SAVINGS OTAL DIRECT LABOR DOLLA 2969 10493 11494 12086 12811 1358 OTAL DIRECT SAVED OADED AVERAGE DIPECT LA OADED DIRECT LABOR SAVE 0ADED DIRECT LABOR SAVE 1593 1516 1606 1703 190	THER DOD FOLLOW ON 3A	0	766	806	161	780	7 8
OTAL DIRECT LABOR DOLLA 2969 10493 114P4 12086 12811 1358 OTAL DIRECT SAVED 2969 10493 114P4 12086 12811 1358 OADED AVERAGE DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON ON MFG DIRECT LABOR SAVE 480.3 1593 1516 1606 1703 190	ABOR COST SAVING						
OTAL DIRECT SAVED 2969 10493 11474 12086 12811 1358 OADED AVERAGE DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON OM OF G DIPECT LABOR	OTAL DIRECT LABOR DO	96	640	C +	208	281	358
OADED AVERAGE DIRECT LA 2.829 2.761 2.739 2.739 2.73 OADED DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON MFG DIPECT LA3OR 480.3 1593 1516 1606 1703 190	OTAL DIRECT SAVED	96	6 7 0	C 5	208	281	358
OADED DIRECT LABOR SAVE 8930 31493 33175 34889 36982 3920 OM ON MFG DIPECT LA3OR 480.3 1593 1516 1606 1703 190	OADED AVERAGE DIRECT L	. 92	. 82	. 76	. 73	. 73	. 73
OM ON MFG DIPECT LA30R 480.3 1593 1516 1606 1703 190	OADED DIRECT LABOR SAV	893	149	317	88.7	698	920
	OH ON MFG DIPECT LABOR	80.	159	151	160	170	190

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HAT SAVED TOM ON MATL COST SAVED

COST OF MONEY							
A COM FOR LABOR	51.86	215.6	171.9			•	iou s
L COST OF HON	₩1	∞	•			20	зор
OM ON CAPI		227	1914	155	119	٠ د	IC
OM RECOVER	•	•	72.	•	٥	1 1 3	D.
SAVINGS BY CUSTOMER							ى ۱۰
TAL DIRECT	96	6 7 0	C *	208	281	358	iব্
AL COST SAVINGS	39	968	148	310	508	719	iov
OTAL OVERH	245	1 9	٥,	0	27	6 1	Δ
OTAL SAVINGS TO SE	6	594	189	985	724	478	ΔĀ
OTAL FEE	179	56	1 49	675	7158	7588	(°D
OMMERCIAL LOADED SAVI	08	6 70	36	58	9 /	7.5	•
OMMERCIAL SAVINGS TO S	132	8 1 1	524	551	9 4	~	
DAMERCIAL GROSS FEE	2	-	٠,	3 1	17	37	
OVI INSTANT LOADED SA	30	129	169	730	0.3		
TALL INSTANT SAVINGS	3	579	404	7.9	365	a	
OVI INSTANT GROSS FEE	26	6 7 7	239	6 7 1	6		
OUT FOLLOW ON LOADED S	0	168	₹. 74	121	628	h h O	
OVT FOLLOW ON SAVINGS	0	203	857	S)	165	36649	
OVT FOLLOW ON GROSS FE		54.	7	432	536	621	
SIX INSTANT LOADED SA	7.6	93.	387	42.		0	
SIX INSTANT SAVINGS	106.4	76.	458	:	0	0	
SIX INSTANT GROSS FEE	9.7	2.9	75.	9.0			
SIX FOLLOW ON LOADED		93.	299	429	76	7.5	
SIX FOLLOW ON SAVIA	0 (76.	ن 19	517	6	8132	
SIX FOLLOW ON 64055 F	(2 . 9	60	16.	7	3.7	
THER DOD INSTANT LOADE	77	060	ac (ac .	7.15	0.3	0 (
THEN DOD INVIANT SAVIN	7916	150) (C	ָרְ ני	365	0 (
THE DOD FOLLOW ON LOAD	7	- c	: : 0 :	1	• C	•	
ER DOD FOLLOW ON SA	ם כ	15.50	1631	20323	24712	28518	
THER DOD FOLLOW ON SRO	0	7.	253	345	4 1 8	483	
JEPRE CLATION							
T DEPRECIABLE	8 2					O	
CC DEPRE	397	568	245	45	2 4	C	
OOK VALUE	76	92	8 4	245			
UMULATIVE DEPREC	8 7	5.5	164	39	8 2	25822	
CEL DEPRECI	3873	5681	5453	5453	5423		
JEPRECIATION	ф Т	5	о Т	6 7	4 9	3495	

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0E							
OTAL SL DEPRECIATIO	349	6 7	0 7	6 7	6	6.7	
EFERRED DEPREC	78.	2186	1928	1929	1928	-3495	
APITAL COM BASE	3	6	3	4	ري ح	796	
V CAPITAL	•	•					
essessessesses SCHEDNIE	8						
PROD SAVINGS REWARD							
XIS F TARTS	106.4	9	α		c	c	
FOLLOW ON F SIX	•	•	•	•	o (1	o C	
INSTANT STHER DOD	8762	25316	1646	8620	3654	. C	
FOLLOW ON OTHER DOD						0	
SSR TO SELL TOTAL	8368	28192	14074	8791	3654	0	
DOD SHARE INSTANT F SIX	0			0	С	0	
F SIX DOD SHARE	C	476.2	3612	5174	6938	8132	
JOD SHARE INSTANT OTHER	0			С			
STHER DOS SHARE	0	Ś	≯	0	47	8 5	
JOD TO SELL TOTAL	0	2035			31650	36649	
TOTAL SAVINGS TO SELL							
INSTANT F	106.4	16	4593	7		0	
FOLLOW ON F		• 9	C.	17	6938	8132	
INSTANT OTHER	8762	531	6 11 6	862	365		
THER FOLLOW		155	97	037	7.1	28518	
TOTAL SAVINGS	8868	782	26 E	433	530	999	
SHARE	C	703	A 5.7		6.5	46649	
TOR SHA?	8 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 2 2		0		•	
T ON SA)	354.4	3142	4328	5363	0	
SUB SHARE	8868	543	093	4 6	170	-6210	
SUBC TOTAL SAVINGS INCOME TAXES	10190	33911	19321	14308	10595	8132	
	7 1	С	0	С	0	0	
B INCOME	-2763	#		3	11	J J	
AXE	9 /	9303	2638	-550.2	-3605	-3400	
EFFERED TAX	74.	00	• 9	86.	86.	160	
SUBCONTRACTOR INCOME AFT	3348	16793	10216	7114	9804	-638.6	
THOUNT THE WOLLDANINGS	AFTFR TA	H					

SUBCONTRACTOR NET INCOME AFTER TAX

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r, 10 10 1	
7 7 7 7	

			•		0101	10001
	CASH FLOW	FLOWeschapespeasche	*****	化 电	***	*
CASH INFLOW PRE TAX CASH INFLOW AFTER TAX P INFLOW AFTER TAX CUMMULATIVE CASH INFLOW CUMMULATIVE LP INFLOW COMMULATIVE LP INFLOW COMMULATIVE LP INFLOW	1361 6842 19018 1361 6942 19018	29754 20288 20635 31115 27130 38653	17794 13711 12675 48910 40841 51328	12050 10609 9395 60959 51450 60722	6442 7581 6278 67401 59030 67000	2312 2856 -922.1 69713 61886
JPV PRE TAX JPV AFTER TAX P NPV AFTER TAX SUBCONTRACTOR BEFORE TAX SUBCONTRACTOR AFTER TAX P AFTER TAX IRR	-25965 -21071 -11093 0 0 0 1985	-2245 -4898 5357 7.161 26.37	10420 4861 14379 29.09 21.15 42.52	18078 11603 20349 37.01 30.09 48.83	21733 15905 23911 39.58 33.94 51.26	22905 17352 23444 40.19 34.90 51.04

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	THIS MODEL WAS CREATED TO THE INDUSTRIAL TECHNOLOGY		APITAL I	ANALYZE CAPITAL INVESTMENTS MODERNIZATION PROGRAM (TECH	REGUARDING MOD1.
	TFART	1661	1992		
	DATA ELEMENTS SECTION				
	X RATE	.0513	.0513		
	OF CAPITALIZED L	0		13859	
	OF CAPITALIZED C	0	Ċ.	14826	
	S TAX H	0	0	26.05	
	TAX	0	C :	759.8	
	4ATERIAL HANDITME	0	O	133.5	
	VON RECOVERED CARTALITY	0	O	1792	
	SECOVERED EXPENSED FOCTS	0 (0	0	
	JONRE COVERED FXPENSED CO	ם ו	٥	0	
		0	0	14623	
	1010	0	0	0	
	F01 104 0	0	0	1691	
_	DOD THYTANT	2613	1855	11830	
		0	O	16521	

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SOLI MOTHWE LINEL COLL

COMMERCIAL DIPECT BOLLAR	261	1855	15046	
010 20 00 11				
	_	いきつか	5546/	
VARIABLE LA	-	_		
FIXED LABOR	0	0		
DIRECT LAB	~	~		
ш	1.355	1.355		
RAT	0	C		
~	.1050	.1050		
I,	0	0		
4FG COM RATE	.1329	.1329		
_	0			
4H COM PATE	0	ב		
34 RATE	.1630	.1630		
SA COM RATE	.0064	4900.		
	~	7		
	.1500	.1500		
EQUIPMENT LIFE	S			
INSTANT DOD FACTOR	0	0		
	~	-		
SPIIONS PAYMENTS	0	C	0	
COM FACTOR	.1038	.1038		
INCOME TAX RATE	0097.	.4600		
ITE	.1000	.1000		
DISCOUNT PATE	.1200	.1200		
PER CENT DOD BUSINESS	.8000	.8000		
* + - z	***	***		* * * * * *
TOTAL BUDGETED CAPITAL	0	0	27181	
NONPECOVERED CA	0	כ		
RECOVERED EXPE	0	C	0	
NON RECOVERED E	0	C)	11690	
RECOVERED DEPRECIATION	3495	C	•	
RECO	3495	0	24463	
NON RECOVERED INV	-3495	0	14416	
CAPITAL	0	0	27181	
ENSED	0	C	11698	
INVESTM	0	0	38879	

10900

0 .8298

14392 •1816 0 •8194 0

TOTAL VARIABLE LABOR DIR COMMERCIAL RATIO SOVT INSTANT RATIO SOVT FOLLOW ON RATIO SIX FOLLOW ON RATIO

RATIO CALCULATIONS

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2 10900 88635 2 10900 88635 9 2.739 6 31466 2576P4 3 1449	000	6 163.3 1394 0 0 0 9 1612 13450 3 282.0 9729 5 -1330 -3731	2 10900 88635 8 29854 244224 1 18954 155589 9 35944 294318 1 6090 50093 7 6117 50011 0 0 50638 0 0 61179 0 24773 152094 2 29827 183127 1 29827 183127 1 5084 31033 0 0 53843 0 0 6619 0 0 9636 0 0 9636
1439 1439 2•73 4154 191		215. 212. 463.	3
TOTAL DIRECT LABOR DOLLA TOTAL DIRECT SAVED LOADED AVERAGE DIRECT LA LOADED DIRECT LABOR SAVE COM ON MFG DIRECT LABOR	MATERIAL COST SAVINGS OADED MATERIAL COST SAV AAT SAVED COM ON MATL COST SAVED	SA COM FOR LABOR SA COM FOR MATERIAL TOTAL COST OF MONEY SAVE COM ON CAPITAL COM RECOVERY	OTAL DIRECT SAVINGS OTAL COST SAVINGS OTAL OVERHEAD SAV OTAL SAVINGS O

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				25022	77007						7446	2002		
c	.	· C	25822	10	C	2718	2446						2718	
0	0	0	25822		3495	2718	24463	•			3495	3648-	44.5	0
VET DEPRECIABLE COST	ACC DEPRECIATION	BOOK VALUE	CUMULATIVE DEPRECIATION	ACCEL DEPRECIATION	JEPRE CLATION	SOOK VAL	CUM DEPRECIATION	JEPR	3K VALUE	CUMULATIVE DEPR		JEFERRED DEPRECIATION	CAPITAL CON BASE	VBV CAPITAL

************* SCHEDULE B

PROD SAVINGS PEWARD

5337	55843	02117	6.110	0	39056	0	144071	183127	•	6117	1905		0 0	\ 0 1 1	244306	
00	0	o c	ח	G	6117	0	23710	29827		C	6117		7.7.1	7 7	29827	
00	0	o c)	0	9617	0	30226	3		0	8617		30201	770	38842	
0	INSTANT OTHER DOD	SEL	SHARE	CD SHARE I	TX DOD SHARE	HAR	ER 000 SH	JOD TO SELL TOTAL	TOTAL SAVINGS TO SELL	INSTANT F	FOLLOW ON F	INSTANT OTHER	STHER FOLLOW ON	2 7 1 7 1 7		

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JOD SHARE SUBCONTRACTOR SHARE .OST PROFIT ON SAVINGS SUB SHARE

29827

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2718 9167 -5178 625.2	39301	13479		021	63763) }				319	823	22182	0.3	5.3	0.6	
	-718.2	AX -718.2 -2117	***	-133	-718.2	021	376	306		319	823	22182	0.3	5.3	9.0	66
0 -766.0 -3793 -1608	-899.2	AFTER TI-899.2	ASH FLOW	∞ (2595	715	t t	5 1		373	852	23037	0.5	5.5	0.9	66
ITC SUB INCOME TAXES P VERSION TAXES JEFFERED TAXES	SUBCONTRACTOR INCOME AFT	SUBCONTRACTOR NET INCOME SUBC NET INCOME AFTER TA P A T SAVINGS		W PRE TAX	AFTER AFTER	E CASH INFL	E CASH INFLO	E LP INFL	DISCOUNTED CASH FLOW		I		TOR BEFORE T	_	AX IR	YEAR

196 JAE IARES

THE FIRST YEAR IN WHICH INPUTS WILL BE MADE IS***	UTS WILL BE MADE	1 IS*** 1985 ***	***
		! ATEST RATES	RATES***
CAPITAL EQUIPMENT COSTS?—>	<i>27181 <</i>	<u> </u>	0.000
		<u>}</u>	00000
DOD SHARE TOTAL BUSINESS?—>	- <u>0</u> 8-		0.000
		Ç¥¥ Y	0000
DOD SHARE OF SAVINGS ****	1.00 ***	Î	0000
		PROF ITS	0000
		Î	0000
MANUFACTURING HOURLY RATE	ENCINEERING H	HOURLY RATE	
	1985	0.00	
	1986	0.00	
	1987	0.00	
	1988	0.00 «—	
	1989	0.00 «	
-> 0°00 061	1990	0.00 «	
	1661	0.00 -> 00.0	
	1992	0°00 «	
	1993	0.00 «	
	1994	0.00 «—	

ENTER DOD SHARE——>	HARE—>>	1.00 «	RESULTING DOD NPV***	OD NPV***	81274	
DOD DISCOUNT FACTOR	VI FACTORS	0.12 «—	RESULTING VI	VND IRR***	0.498	
VENDOR DISC FACTOR>>	: FACTOR>>	0.35 «	RESULTING VI	NO NEV***	3108	
	VENDOR		8	QQQ		
YEAR	CAPITAL	PSR	YEAR	SAVINCS		
1985	-21946	99 <u>8</u> 8	1985	-3495		
1986	18680	25792	1986	-1460		
1987	12104	14074	1987	15081		
1988	1006	8791	1988	22052		
1989	5974	3654	1989	. 28155		
1990	1248	0	1990	33155		
1661	8	0	1661	35348		
1992	-718	0	1992	29827		
1993	0	0	1993	0		
1994	0	0	1994	0		
TOTAL	25332	61179	TOTAL	158663		

SCHEDUR AI	SCHEDULE AI FORECASTED INSTANT F-16 SAVINCS -ALT W-	SAVINCS	* *	*****	*****	**************************************	*******	,*** ****	****	:*** ***	****** *	****
		1985	1986	1981	1988	6861	0661	1661	1992	1993	1994	TOTAL.
1. MIERIALS		0	0	0	0	0	0	0	0	0	0	0
2. HANGACTURING HOURS 3. MICHALY RATE 4. SUBTOTAL	curs	0.0	0.0	0.0	0.00	00.0	0.00	0.0 0	0.0	00.0	0.0	0 0
5. ENCINEERINC HOURS 6. *HOURLY RATE 7. SUBTOTAL	S	00 0	0.00	0.00	0.00	0.00	0.0 0	0.00	0.00	0.00	0.00	
8. OTHER (SPECIFY)										•	,	
9. TOTAL DIRECT		0	0	0	0	0	0	0	0	0	0	0
10. MATERIALS 11. MANUFACTURING 12. ENCINERRING 13. OTHER (SPECTY) 14. GEN & ADM		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
15. TOTAL INDIRECT		0	0	0	0	0	0	0	0	0		
16. SAVINCS THRU CLA		88	393	3807	142	0	0	0	0	0	0	4430
******		****	***	*******	*******	***************************************	*******	*******	******	******	***************************************	*****

1		1985	1986	1987	1988	1989	1990	1661	1992	1993	7661	TYTEAT
-	1. MATERIALS	0										
5 H 4	MANFACTURING HORS *HORELY RATE SUBTOTAL	00.0	0.00	0.00	00.0	0.0	0.0	0.00	0.0	0.00	0°0	0
	ENCINEERING HORS #HOURLY RATE SUBTOTAL	000	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.00	0 0
Ď	UNER (SPECIFY)											
6	TOTAL DIRECT	0	0	0	0						d	•
10. 1 12. 1 13. 6	10. MATERIALS 11. MANUFACTURING 12. ENCINERING 13. OTHER (SPECIFY) 14. GEN & ADPN	00000	00000	00000	20000	00000	00000	00000	00000	00000	0000	0000
15. 1	15. TOTAL INDIRECT	0	0	0	0							0
16. 9	16. SAVINGS THRU GGA 0		393	2993	4297							32438
	I KANANANANANANANANANANANANANANANANANANAN	***	*****	****	*****	****	*****	****	ŧ	ŧ	****	*****

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CHEDINE AS	FORECASTED INSTANT OTHER DOD SAVINGS	DOO SAVID	83									
		1985	1986	1987	1988	1989	0661	1661	1992	1993	1994	TOTAL
1. MTERIALS		0										0
2. MANIFACTURING HOURS 3. MEURLY RATE	HOURS	00.00	00.00	0.0	0.0	0.0	00.00	00.00	00*0	0.0	0.0	0
4. Subicital.		0	0	0	0	0	0	0	0	0	0	0
5. ENCINEERING HOURS 6. **HOURLY RATE	OURS	0.00	00.00	0.00	0.00	0.00	0.00	00.00	0.00	0.00	0.00	0
/ SUBTOTAL		0	0	0	c	0	0	0	0	0	0	0
8. OTHER (SPECIFY)	Ç.									•		
9. TOTAL DIRECT		С	0	0	0	0	0	0	0	0	0	0
10. MATERIALS		0	0	0	0	0	С	0	0	0	0	0
11. FRANCEACTURING 12. ENGINEERING		0 0	00	00	00	00	00	00	0 0	0 0	00	00
13. OTHER (SPECIFY) 14. CEN 6 ADM	c	00	00	00	00	00	000	000	000	000	000	000
15. TOTAL INDIRECT		0	0	0	0	0	0	0	0	0	0	
16. SAVINCS THRU GGA		7221	30906	7886	7159	3035	0	0	0	0	0	46207
*****	===	****	********	*******	*******	******	*******	******	********	*********	********	*******

1-

SOFIUE A FORECASTED -ALT Z-

FORECASTED F/O OTHER DOD SAVINES

119656 TOTAL 1994 0.00 0.00 1993 0.0 0.00 1992 0.00 0.00 19692 1991 0.00 0.00 25104 1990 0.0 0.00 23686 1989 0.00 0 0.00 20525 1988 0.00 0.00 16921 1987 0.00 12441 1986 0.00 0.00 1287 1985 0.00 0.00 MANIFACTURING HOURS **HOURLY RATE ENCINEERING HOURS 16. SAVINCS THRU GLA OTHER (SPECIFY) 13. OTHER (SPECIFY) 15. TOTAL INDIRECT 11. MANUFACTURING MIDURLY RATE TOTAL DIRECT 12. ENCINEERING 14. CEN 6 ADM 1. MATERIALS 10. MATERIALS SUBTOTAL SUBTOTAL 4 3.5

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SOFEME A BY

BY ELEMENT SAVINGS SUPPLARY TO COST

ı		1985	1986			6861	0661	1661	1992	1993	1994	TOTAL
:	I. MIERIALS	С	0	1	i .	С	0	0	0	0	0	0
4 3.5	MANIFACTURING HOURS MURIX RATE TOTAL MFC LABOR	0.00	0.00	0.00	0.00	0°0 0	0.00	0.00	0.00	0.00	0.00	0 0
. 6.	ENCINEERING HOURS MICHELY RATE TOTAL ENG LABOR	0.00	0.00			0°0 0°0	0.00	0.00	0.00	0.00	00.0	0 0
æ	OMER (SPECIFY))
9.	TOTAL DIRECT	0	0		0	0	C	0	0	0	0	0
12.12	10. MATERIALS 11. MANUFACTURING 12. ENCINEERING	000	000	000	000	000	0 0	0 0	00	00	0 0	0
13.	13. OTHER (SPECIFY)	000	000			000	c c o	000	000	000	000	000
15.	15. TOTAL INDIRECT	0	0		С	0	0	0	0	0	0	0
16.	16. SAVINCS THRU CAA	0	0		0	0	0	0	0	0	0	C
***	***************************************	****	****		*******	*****	*****	*****	********	******	*******	*****

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PROD SAVINCS REMARD 1. INSTANT F-16 2. F/O F-16												
1. INSTANT F-16 2. F/O F-16												
2. F/0 F-16	-	<u>8</u>	476	4583	171	0	С	0	0	0	0	5336
		0	476	3602	5174	8669	8132	8617	6117	0	0	39056
3. INSTANT OTHER DOD	87	8762	25316	1676	8620	3654	0	0	0	0	0	55843
4. F/O OTHER DOD		0	1559	14974	20373	24712	28518	30226	23710	0	0	144072
5. SUBTOTAL	&	8988	27827	32650	34338	35304	36650	38843	29827	0	0	244307
DOD SHARE												
6. INSTANT F-16	-	33	476	4583	171	0	С	О	0	0	0	5336
7. F/O F-16		0	476	3602	5174	8669	8132	8617	6117	0	0	39056
8. INSTANT OTHER DOL	87	8762	25316	16%	8630	3654	0	0	0	0	0	55843
9. F/o other dod		0	1559	14974	20373	24712	28518	30226	23710	0	0	144072
10. SIRIOTAL	8 2	8868	27827	32650	34338	35304	36650	38843	29827	0	0	244307
TOTAL SAVINES												
11. INSTANT F-16 (SQ	(SQ! Al)	<u>2</u>	476	4583	171	0	С	0	0	0	0	5336
	(SCH A2)	0	476	3602	5174	88.69	8132	8617	6117	0	0	39056
TIMETR DOD	(SCH A3) 87	8762	25316	9491	8620	38.25	0	0	0	0	0	55843
•	(SCH A4)	c	1559	14974	20373	24712	28518	30226	23710	0	0	144072
15. TOTAL	æ	8868	27827	32650	34338	35304	3650	38843	29827	0	0	244307

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NVESTIMENT	
EXPENSES/1	
FORECASTEE)	
RECOVERED	

SCHEDULE C

TOTAL

1. MTPRIALS											O
2. HANDFACTURING HOURS	8	8	8	9	8	8	8	8	8	9	0
4. SUBIUTAL	0	0	0	0	0	0	0	0	0	0	0
	8	8	8	8	8	5	5	5	5	5	0
0. THUMEN WALE 7. SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0
8. Oner (Specify)											0
9. TUTAL DIRECT	O	0	0	0	С	0	0	0	0	0	0
10. MATERIALS	С	0	0	0	С	С	С	0	0	0	0
11. MANUFACTURING	0	0	0	0	0	0	0	0	0	0	0
12. ENCINERING 13. COMER (SPECIEY)	00	0 0	0 0	c c	c c	0 0	0 0	0 0	c c	0 0	0 0
I4. (EN & ADN	0	0	0	: 0	0	0	0	0	0	0	0
15, TOTAL INDIRECT	0	0	0	0	0	0	0	0	0	0	0
16. irprectation (cas409)	3495	3495	3495	3495	3495	3495	3495				24465
17. TOTAL RECOVERED	3495	3495	3495	3495	3495	3495	3495	0	0	0	24465
				***************************************					***************************************		

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UNRECOVERED FORECASTED EXPENSES/INVESTMENT

	1985	1986	1987	1988	1989	1990	1991	9	-		
I. MTERIALS	0						1881	7661	1993	1994	TOTAL
2. MANIFACTURING HOURS											0
5. MORRLY RATE 4. Subtotal	0.0 0	0.00	0.00	0.00	0.00	0.00	0°0	00.00	0.00	0.00	0
)	o	9	0	0	0	0	0	0
6. *HOURLY RATE 7. SUBTOTAL	0.00	0.00	0.00	0.00	00.0	00.00	0.00	00.00	0.00	0.0	0
8. OTHER (SPECIFY)				>	>	c	0	0	0	0	0
9. TOTAL DIRECT	0	0	0	c	c	Ć					
10. MATERIALS 11. MANIFACTIRING	0	0	0	0			0 0	0 0	0	0	0
12. ENCINERING 13. (THER CENTER)	00	00	00	00	00	000	00'	00	00	00	0 0
14. CEN 6 ADM	0 0	00	00	000	000	000) o	0 0	0 0	00	00
15. TOTAL INDIRECT	11698	0	0) =			0	0	0	0	0
16. DEPRECIATION (CAS409)	0			·				0	0	0	11698
17. TOTAL UNECOVERED	11698	0	-	-	}	(1
	*************	*****	******	******			0 **********	0 ==== *********	0	0	11698
											•

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I INCINE	
"ORECASTED SUBCONTRACTOR NET INCINE	
FORECASTED S	
3	ا

1			1985	1986	1987	1988	1989	1990	1661	1992	1993	1994	TOTAL
2.	1. GROSS SAVINCS 2. LESS EXPENSES AT SELL	(SQH B)	3495	27827 3495	32650 3495	34338	35304 3495	36650	38843	29827	00	0	244307
ų .	SAVINCS AVAILABLE LESS: DOD SHARE		5373	24332	29155 15081	30843	31809	33155 33155	35348 35348	29827	00	00	219842
8.7.6	PROD SAVINCS RAD LESS: EXPENSES AND: PROF/COM ON SON C OTHER (SPECIFY +/-)	(g HDS)	8868 11698 0 697	25792 0 0 467	14074 0 0 226	8791 0 0 0 -237	3654 0 0 -706	0 0 0 -1183	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0	000	000	96911
9. 10.	9. CONTRACTOR TAXABLE INCOME 10. LESS: CORP TAX? 0.46 11. ALD: INVEST TAX CREDIT CAPITAL COSTS? 27181 ADD BUSINESS? 1.00		-2133 -981 2718	26259 12079	14300	8554 3935	2948	-1183	-1665	-1330	0 0	00	45750 21045 2718
12.	12. SUBCONTRACTOR NET INCOME		1566	14180	7722	4619	1592	639	668	-718	0		2777.00
13.	13. DEPRECIATION (TAX)		3873	189 <u>5</u>	5423	5423	\$423	0			·		(74/7
14.	14. LEPERRED TAXES		174	9001	887	1887	887	1608	1608	0	0	0	7867
#	***************************************	******	********	****	*******	*******	*****	******	********	******	******	*******	******

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ALT F-		1985	9861	1861	1988	1989	1990	1661	1992	1993	1994	TOTAL
1. ADD: NET INCHE 2. IEPRECIATION (CAS 409) 3. IEFERRED TAXES 4. NEW OF DISPOSABLE F/A 5. OTHER (SPECIFY) 6. LESS: CAPITAL INVESIMENT 7. OTHER (SPECIFY)	(SCH E) (SCH C/D) (SCH E)	1566 3495 174 27181	14180 3495 1006	7722 3495 887	74619 3495 887	1592 3495 887	-639 3495 -1608	-899 3495 -1608	0 0 0	000	0 0	27423 24465 625 0 0 27181
8. AFTER TAX CASH FLOW 9. CLAULATTVE ATC FLOW		-21946	18680	12104	9001	5974	1248	988 26050	-718 25332	0 25332	25332	25332
10. WITH A DISCOUNT FACTOR -> 0.1200 <-NEV IS**	•> 0.1200 <	₩N IS**	13812 **									
11. SUBCONTRACTOR TRR	0.4977											

SCHEDULE OF FORECASTED AFTER TAX CASI FLOW

SCHEDILE F